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ABSTRACT

Issues and present trends related to the preparation and the expanded role of the nurse and physician's assistant in meeting health needs are the major concerns of part one, representing 100 pages of the document. Issues discussed include: (1) manpower considerations, (2) definition of responsibilities, training needs, and requirements, (3) descriptions and evaluations of a variety of existing educational programs for the nurse practitioner and physician's assistant, and (4) current issues and concerns related to salaries, licensing, and occupational roles. A partial listing of programs preparing nurse practitioners and physician's assistants to function in expanded roles and a bibliography complete the section. A 19-page annotated bibliography presents a listing of resources in the following areas: (1) related and general background information for allied health personnel and meeting health needs, (2) the nurse practitioner, (3) the physician's assistant, (3) legislative and legal implications, (4) nurse-physician relationships, and (5) books, other resources, and annotated bibliographies. (MW)

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# THE NURSE PRACTITIONER: AN ANNOTATED BIBLIOGRAPHY

The Community Planning Committee for Nursing Education
Rochester and Elmira Areas

July, 1971

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# THE NURSE AS A PRIMARY

# HEALTH CARE PROVIDER

(Issues and Present Trends Related to the Preparation and Expanding Role of the Nurse in Meeting Health Needs)

Prepared by:
Miss Lesley Perry
for the
Community Planning Committee
for Nursing Education,
Rochester and Elmira Areas
July, 1971

Table of Contents

Introduction..... 1

Health Manpower Considerations..... 4

The Nurse Practitioner..... 12

The Physician's Assistant..... 31

Evaluation of the Nurse Practitioner and the Physician's Assistant..... 41

Issues and Concerns..... 51

Summary..... 63

Conclusions..... 70

Appendix A..... i

A Partial Listing of Programs Preparing Nurse Practitioners

Appendix B..... vii

A Partial Listing of Programs Preparing Physician's Assistants

References.....

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## Introduction

Concern with the ability of existing systems to deliver equitable and quality health care to all persons of the Rochester-Genesee Valley region prompted the Community Planning Committee for Nursing Education to explore ways for nursing to contribute to the improvement of health care through advancements and innovations in nursing education. During the years 1970-71, the Community Planning Committee, which is sponsored by the Genesee Valley Nurses' Association and which also serves as the planning committee on nursing education for the Genesee Region Educational Alliance for Health Personnel, Inc., sponsored a project to determine the direction and studies needed for areawide planning in nursing education.[1] One recommendation of the project was the continuation of efforts in the region to expand the functions of the nurse, as in the nurse practitioner program, and greater adoption of the principle of collaborative planning between physicians and nurses, as demonstrated by the nurse practitioner program.

In an attempt to more clearly define the issues involved in the preparation and utilization of the nurse in an expanded role as nurse practitioner and in related roles such as the physician's assistant, the Community Planning Committee requested that the literature on the subject be reviewed and an annotated bibliography be prepared. Since there is already one program in existence in the area to prepare nurse practitioners, and others are in the planning stage, it was felt that it was desirable to have information to assist the Committee in preparing guidelines for the future development of nurse practitioner programs in the region.

The literature was reviewed during a six week period during the months of June and July, 1971. A list of questions was prepared by the Committee to

guide the reviewer. The questions regarding the preparation and use of the nurse practitioner in meeting the health needs in the region included:

1. How does the nurse practitioner program articulate with existing educational programs?

   a. Graduate study
   b. Baccalaureate programs
   c. Other programs

2. Is there a difference in the preparational needs of the nurse with different basic preparation, or different experience?

3. What additional content and experience is needed by the student in a B.S. program that is not now included?

4. What could be core content versus specialized content?

5. How does one define the education and expectation in the more independent roles versus the roles that include more direct contact with the physician?

6. How do the nurse and the physician learn to work more closely together in the collaborative, interdependent roles?

7. What clinical settings can be used that will provide collaborative relationships with physician and nurse?

8. How is the role of the nurse practitioner differentiated from the physician's assistant?

9. How are the programs financed and administered? Tuition costs, length of program, faculty, etc.?

10. Should the nurse practitioner program be located in a school of nursing, or a school of medicine?

11. What is the relationship to other continuing education programs?

The material presented in the following pages does not necessarily answer the questions posed, and in some cases may pose further questions, but it serves as a perspective from which to view the subject along with some of its attendent issues and problems.

The subject of the nurse practitioner and the physician's assistant is a broad one, and there is much in the literature that is relevant to it. The scope of this review is necessarily limited due to the short amount of time

available in which to complete it, and, therefore, reflects only a portion of what is available in the literature on the subject.

Health Manpower Considerations

The crisis in health care in the United States needs little documentation. Much has been written and many studies and statistics are available to suggest that the United States is in a critical period in its ability to provide quality health care to all of the people of the nation. The AMA Council on Health Manpower in a recent progress report states that the three major concerns of the Council are: "...1) more effective use of existing personnel and resources; 2) increasing the numbers of active health personnel; and 3) safeguarding the quality of care provided under current and evolving health systems."[2] Sanazaro lists three barriers to attaining the goal of access to appropriate levels of health care for all citizens as: inadequate manpower sources, inability of the health professions to take advantage of technology and organization to increase their productivity, and inadequate methods for financing health care for all persons.[3] Other sources [4,5,6] suggest that the shortage of health manpower, especially physicians, is due to maldistribution, increased specialization, and increased demands for health care services. It is pointed out that the public is better informed about health and demands more services, and that new areas of medical knowledge are maturing, thus increasing the need for services due to the increase in information. Physicians tend to choose their practice settings based on a variety of features, such as: community purchasing power, adequacy of hospital facilities, availability of professional colleagues, and educational opportunities for their families. This means that physicians tend to cluster near urban areas which provide the above mentioned facilities, leaving rural and low-income areas with few or no physicians. The trend toward specialization has also reduced the number of generalists (i.e., general practitioners, general internists, and general pediatricians) providing primary health care.

The solutions suggested for meeting the health manpower crisis seem to revolve around three main methods: increasing the supply of health care personnel, increasing the productivity of existing personnel, and training new types of allied health personnel to extend the services of existing personnel, especially the physician. Many suggestions for increasing the number of physicians have been made, including: increasing the class size in medical schools, creating new medical schools, reducing the failure rate in medical schools, shortening the preparation period for physicians, changing admission requirements or the curriculum of medical schools, or both, in order to produce more practitioners than academicians. Since this is a slow and expensive process, it seems unlikely that increasing the supply of physicians can make an appreciable dent in the current problem for some time. Emphasis has, therefore, been placed on the latter two solutions. The use of non-physician personnel, either currently existing or newly trained, is seen by some as the answer to the health manpower shortage. It is thought that these personnel, by assuming some of the physician's tasks, will not only increase the physician's productivity, but also extend health care to people not now receiving care. Organization of health services on a community basis and use of technological advances, such as computers, are also seen as necessary to improve the provision of services.

The preparation and use of non-physician personnel to extend and compliment health services has raised many questions and issues. An abundance of demonstration and pilot projects have sprung up around the country. With the multiplicity of programs has come confusion as to titles, functions, amount and kind of preparation necessary, amount of independence and responsibility desirable, relationship to the physician, and legal approval and responsibility. There appears to be little agreement on any of these items. There seems to be

general agreement on the fact that it is necessary for the physician to delegate some of his tasks. Ingles estimates that 50-75% of patients seen in general medical clinics, both adult and pediatric, have no "... life-threatening tissue-destroying process..." and do not require specialized medical talent. She further states that probably 50% of the services now provided by physicians do not require their professional skills.[7]

A survey of pediatricians, conducted by the American Academy of Pediatrics, was designed to elicit information about the utilization of existing allied health workers and opinions on this subject. A questionaire was mailed to all Fellows of the Academy. The questionaire contained a series of forty technical, clerical, laboratory, and patient care tasks selected as being representative of all tasks performed in ambulatory pediatric care. The survey found that registered nurses were utilized to a great extent for clerical, laboratory, and technical tasks, but not in preference to other workers when those workers were available. The physician more frequently performed patient care tasks rather than delegated them to other workers; but when he did delegate patient care tasks, the registered nurse was chosen more than half the time. The number of workers employed had a stronger effect on the delegation of technical, clerical, and laboratory tasks than on the delegation of patient care tasks. The frequency with which the physician delegated tasks increased in direct relation to the number of workers he employed. However, even when a greater number of other types of health workers were available, the registered nurse continued to perform a large proportion of relatively routine tasks. The patient care tasks which the physician did delegate tended to be those associated with the more urgent and least controllable aspects of the practice, such as telephone calls, and those which could most easily be routinized, such as interpretation of written instructions

and formal history taking. The tasks which the physician was least likely to delegate were those that involved clinical judgment or a more intimate patient relationship, such as the physical examination or interval history taking. Of six patient care tasks requiring out-of-office visits, only one, hospital newborn visiting, was carried out by the physician.

The survey also attempted to obtain information on the pediatricians' opinion of the delegation of tasks. At least two-thirds of the respondents replied that they would be willing to hire an allied health worker to carry out patient care tasks that were currently being performed by the physician. Four out of five predicted a favorable outcome from such task delegation. The specific tasks which were given the highest priority for delegation were: information giving, such as child care and feeding, information seeking, such as history taking and home visiting, and counseling, such as advice regarding feeding, development, etc. The major conclusion of the survey was that the large majority of those responding appeared to favor greater patient care responsibilities for the nurse and the use of aides, assistants, or secretaries for many of the nurse's current activities.[8, 9]

Another survey, conducted by Coye and Hanson, of Wisconsin physicians, was designed to obtain information about the attitudes of physicians in relation to the responsibilities that they would, or would not, delegate to assistants. A questionaire was sent to members of the Wisconsin State Medical Society. A 32% response rate was received. Agreement by the majority of the respondents was reported on the following: the assistant should have training comparable to that of a nurse plus one year or more; the salary should be between $7,500.00 and $10,000.00; the assistant should not have the title of "doctor"; the assistant could be employed by and work in either a hospital or a physician's office; and nurses are the most urgently needed assistants.

Sixty-eight percent of the respondents from all specialties replied that the assistant should be able to assist in the operating room. The majority of respondents from each specialty, except obstetrics and anesthesiology, indicated that the assistant should be able to take a preliminary history. The majority of physicians responding indicated that the assistant should not be allowed responsibility for the following tasks: performing physical examinations, doing emergency room procedures, giving anesthetics, providing post-operative care, performing deliveries, and providing prenatal and well-child care. As the proposed duties more closely approached the specialty skill of the responding group, the response tended to become more strongly negative. The majority of the respondents from all specialty groups, except psychiatry, indicated that they thought that use of an assistant would give them more time to spend dealing with patients who had difficult problems. Many of the physicians responding thought the use of an assistant would allow them to serve more patients. In response to a question regarding whether the physicians would use an assistant in their practice, 54% of the surgeons and 41-44% of the general practitioners, pediatricians, and internists replied in the positive. Physicians in small communities were more likely to respond favorably to delegation of responsibilities. Physicians on the staffs of medical schools seemed to be less favorably inclined to agree to broad functions for the assistant. There seemed to be little difference between the responses of doctors in group practice and those in solo practice. Number of years in practice and age also seemed to have little effect on the responses.

In summarizing the analysis of the data, Coye and Hanson see two general types of duties for the assistant: acting as surgical technicians in the operating and recovery rooms and performing other duties, such as taking medical histories and providing post-operative care; and being trained to assist in the

care of patients who are usually seen by the general practitioner, pediatrician, or internist. Duties in this area of function might include: obtaining histories, doing technical procedures, screening patients, and making some judgments. The survey concluded that the physicians viewed the assistant as being "... almost exclusively technicians."[10]

A survey of Kentucky physicians indicated that the majority saw a need for a new type of health worker, and 75% said that an assistant would be of use in their practice.[11]

The apparent discrepancy between the actual delegation of tasks by physicians to other health workers and the professed willingness of physicians to do so perhaps needs closer scrutiny. Levy discusses four factors which effect the delegation of tasks by physicians. Those factors cited are: conservatism, economic self-interest, and specialization; the issue of "final medical responsibility"; delegation versus surrender of function; and comprehensiveness of function. The fact that the physician has traditionally been given moral and legal responsibility for practicing medicine has resulted in strong feelings of responsibility for the total care of his patients. Levy suggests that physicians may have feelings of guilt and inadequacy due to the constant awareness of gaps in his own and current medical knowledge. These feelings may be dealt with in a defensive manner and may result in the need to control all aspects of patient care. The physician is more likely to resist transferring functions if this is viewed as surrender of functions rather than delegation. Transfer of functions to others becomes easier if the function becomes defined as "non-medical", (i.e. the task is not viewed as being of immediate concern to life or death or the task becomes technicized or routinized, requiring little judgment); or the task becomes defined as "uneconomic". Resistance to transfer of functions to others is also more likely to be

encountered as the function becomes more comprehensive. Levy feels that resistance to the use of paramedical personnel is decreasing and will continue to decrease due to the fact that physicians as a group are becoming less conservative; group practice is becoming increasingly more common, requiring and facilitating the use of paramedical personnel; and the concept of final medical responsibility is being transformed into the concept of shared group responsibility. All of these factors will make the delegation and transfer of functions easier.[12]

With the proliferation of paramedical and allied health personnel has come a proliferation of titles and responsibilities. In an attempt to clarify the different health workers caring for children, the American Academy of Pediatrics has outlined three classifications of allied health personnel: the pediatric nurse associate, the pediatric office assistant, and the pediatric aide.

The pediatric nurse associate is defined as:

> A Registered Nurse who has completed a diploma nursing program or an associate degree nursing program or is a graduate of a baccalaureate nursing program. This associate will also have completed a recognized pediatric nurse associate (practitioner) program of about four months' duration. A pediatric nurse associate's responsibilities may include activities that are directly related to patient care; e.g., obtaining medical and health histories, performing portions of the physical examination, giving information and counsel, and managing health problems. These tasks will be performed under the supervision of a physician.

The pediatric office assistant:

> ... will, when possible, have completed at least two years of college or its equivalent, which will include a minimum of nine months training in general medical background oriented toward child care, or be a graduate licensed vocational or licensed practical nurse with post-graduate pediatric training. She will work under the supervision of a physician or a nurse associate in patient care, e.g., obtaining medical histories, performing screening procedures, and such other administrative, clerical, and minor technical functions or other duties as the physician or nurse associate may direct.

The pediatric aide:

> ... when possible, will have completed at least high school or its equivalent. A pediatric aide will usually be trained on the job by a pediatrician certified by the American Board of Pediatrics. She will work under the supervision of a physician, pediatric assistant, or pediatric nurse associate.[13]

There seems to be some general recognition of three levels of physician extenders: the associate level, the assistant level, and the aide. These levels seem to be based on the skills and training required, the breadth or narrowness of the tasks to be performed by this worker, and the degree of independence allowed. There also seems to be general agreement that the physician must be ultimately responsible for the performance of these non-physician health workers. Three levels of supervision are described: "over the shoulder, on the premises, and remote with monitoring."[14] Confusion may arise over the title of associate, as some of the personnel described as associates may be nurse associates, while others are not nurses at all. While in some cases there are similarities between the responsibilities of nurse and non-nurse associates, in others there are not.

For the purposes of this paper, two divisions have been made: the nurse practitioner and the physician's assistant. The division is based on whether the program prepares a person with an educational and experiential background in nursing to function in a more expanded role in providing health care, or whether it prepares a person with little or no medical background to function as an assistant to a physician in providing care. The material which follows will provide a summary illustrative of what is taking place in various programs designed to prepare either nurse practitioners or physician's assistants. Within each division is a range of programs preparing personnel for various levels of responsibility, but which generally fall under the heading of either nurse practitioner or physician's assistant.

The Nurse Practitioner

One of the suggested solutions to meet the health manpower crisis has been to more effectively utilize existing personnel. It has been suggested that the nurse's responsibilities could be expanded or extended. Murphy differentiates between role extension and role expansion. Role extension is defined as "... carrying out the same functions in protracted contexts or elongating specific, already assumed functions to fill perceived gaps in the health care system." Role expansion is defined as a "... multi-directional change undertaken not only to fill perceived gaps in the health care system, but also to project new components or systems of health care."[15] Murphy further explains the expanded role of the nurse by saying that

> While the expanded role of the nurse might include responsibility for basic physical examinations, the nurse would also be responsible for the primary care of selected patients, assessment of nursing care needs, projection of nursing care plans, and evaluation of the efficacy of her efforts. Any inevitable role overlapping between the nurse and the physician is more in the nature of broadening the nurse's contribution to health care rather than impinging on a portion of the physician's roll.[16]

Many programs and projects have been carried out in order to enhance the nurse's contribution to health care and to meet service needs not already being met. Some projects have provided the nurse with inservice educational programs or with no additional training to assume expanded roles, but have provided settings in which these roles may be practiced. Other programs have provided additional formal preparation, ranging from sixteen weeks of classroom and on-the-job training to eighteen months to two years of master's level preparation.

Illustrative of the first type is work done at the University of Kansas where nurses have served as the primary source of care for adults with chronic illnesses. This project originated as a research undertaking, financed by the United States Public Health Services. Sixty-six patients were selected from

those who attended the regular medical clinic, and included patients from five major diagnostic categories: hypertensive cardiovascular disease, arteriosclerotic heart disease, exogenous obesity, psychophysiological reactions (i.e. gastro-intestinal or musculoskeletal disorders), and arthritis, both rheumatoid and degenerative. The patients were randomly assigned to either the control group, in which care was provided by fourth year medical students under the supervision of staff physicians (medical clinic), or to the experimental group, in which care was provided by a nurse (nurse clinic). The patients in both groups were interviewed and tested prior to initiation of the project to determine socio-economic background, illness behavior patterns, frequency of use of medical care facilities, family and past history of disease, attitudes toward physicians and nurses, and other personality factors. Specific objectives for medical and nursing care were written for each patient in both groups, and standard orders were written for the patients in each diagnostic category. The standard orders defined the limits within which the nurse might initiate or alter medical care. The patients receiving care in the nurse clinic saw only the nurse, unless consultation was sought with the physician by the nurse or requested by the patient. The charts of all of the patients seen in the nurse clinic were reviewed daily by one of the two physicians involved in the project. After one year, the patients were retested using the same instruments as used previously and the results of the project were evaluated.* The preparation of the nurse in the nurse clinic included experience in in-patient and ambulatory services and a master's degree in public health. The successor to this nurse and the nurse in a second hospital clinic in which the study was replicated both held a baccalaureate degree in nursing, had had experience in in-patient care, and were strongly oriented to public health.[17,18,19]

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* Results of the project are presented on Pages 41-44.

A four year demonstration project at the Montefiore Hospital Medical Group introduced a public health nurse into maternity and pediatric care in association with a physician in order to explore the possibilities and evaluate the effects of such a relationship, particularly on patient and physician acceptance. Obstetrical patients coming to the group practice were randomly assigned to either the study group for care by a physician and a public health nurse or to the control group for care by a physician alone. The patients were followed throughout their pregnancy and the mothers and infants were followed for two years after birth. In the original plan, the study patients were to see the obstetrician seven times during the pregnancy. After one year of the project, the physicians recommended that the number of obstetrician visits be reduced to five. The study patients saw the obstetrician on the first visit, one month after the first visit, and during the first, third, and fourth week of the ninth month. The nurse saw the patient eleven times during the first year of operation of the project. This was reduced to nine times in the second year of the project. The nurse saw the study patients monthly through the seventh month, and then biweekly through the rest of the pregnancy. The nurse also visited the mother once at home and once in the office postpartally. The nurse's activities in this aspect of the project included determining fetal position, weight gain, and fetal heart sounds, giving anticipatory guidance as necessary, and managing medical or emotional problems through standing orders or by referral to the physician. The nurse also conducted expectant parents' classes.

Pediatric care in the project consisted of nine visits to the pediatrician during the first year of life for control group patients, and seven visits to the pediatrician for the study group. The nurse saw study group infants at three weeks, and then monthly until five months of age, bimonthly until one year of age,

and quarterly until two years. During combined nurse-physician visits, the nurse would screen the patients, discuss presenting problems, do routine examinations, and give guidance and advice. During visits to the nurse alone, she would do routine measurements and a physical examination, check on development, and provide anticipatory guidance and discussion of problems. During each patient visit, the nurse was involved in four aspects of care: identification of problems, evaluation of the problems, direct nursing care, and health education. The evaluation of the patient's needs made by the nurse determined whether a combined physician-nurse visit was needed or if the nurse could handle the problem herself. Patients tended to use the nurse for a variety of needs and problems, such as physical and psychological problems, self-care during pregnancy and after delivery, well-baby care, care of the sick infant with both acute and chronic illnesses, family problems, and family planning.[20,21]

Other programs have provided the nurse with additional specialized training in a continuing education type of program associated with a university or health care institution to prepare her as a nurse practitioner. Probably the best known of these programs is the pediatric nurse practitioner program conducted by the University of Colorado.[22, 23, 24, 25, 26, 27, 28] This program was started in 1965 by Dr. Henry K. Silver, Chairman of the Department of Pediatrics at the University of Colorado Medical Center, and Dr. Loretta C. Ford, Chairman of the Community Health Nursing Department in the School of Nursing. It was begun as an experimental project, funded in part by the Commonwealth Fund. Originally only nurses with master's degrees were admitted to the program. It was found, however, that they learned the medical knowledge and clinical skills very rapidly; so, it was decided that a baccalaureate degree would provide sufficient background and preparation for the program. The program is divided into two phases. Phase I is a four month period of intensive theory and practice in pediatrics at the medical center. The

students have assignments on various in-patient units, clinics and nurseries. They learn improved interviewing techniques, how to perform a complete physical examination, including inspection, palpation, percussion, and auscultation, and the use of such tools as the otoscope, opthalmoscope, and stethoscope. Seminars are held on the aspects of parent-child relationships, variations in growth patterns, physical and psychosocial development, essentials of infant nutrition, including breastfeeding, writing, preparation, and modification of formulas, solid foods, and vitamins, and immunization schedules and procedures, including how and when to modify them. Other areas included in Phase I are: review of the dynamics of physical, psychosocial, and cultural forces affecting health; discussion of personality development; development of proficiency in counseling parents in child-rearing practices; participation in evaluating and managing healthy children and children with a variety of acute and chronic disorders, such as upper respiratory tract infections, skin eruptions, otitis media, communicable diseases, diarrhea, and constipation; evaluation of hearing defects, speech defects, visual impairments, and various congenital and acquired orthopedic defects; learning the essentials of good dental care and methods of identifying dental problems; learning to do urinalyses, hemoglobin determinations, and to obtain various laboratory specimens; assisting in the management of emergency situations, such as poisonings, accidents, hemorrhage, apnea, etc.; and developing competency in assessing the overall status of ill children in order to determine acuteness and severity of disease.

Phase II of the program is an eight to twelve month period of practice in a community child health field station or in a pediatrician's office. In these settings, the pediatric nurse practitioner provides total well-child care, management of some minor disorders, and management of ill children by following a previously prepared plan. The nurse practitioner always functions under the

supervision of a physician, even though he may not be physically present all of the time. All children seen by the pediatric nurse practitioner are also seen by the physician at regularly scheduled intervals. The activities of the pediatric nurse practitioner prepared by the Colorado program are described as follows:

The pediatric nurse practitioner may:

1. take a complete pediatric history
2. perform a comprehensive basic physical examination
3. carry out necessary immunizations
4. determine developmental status
5. evaluate hearing, speech, and vision
6. perform urinalysis and hemoglobin determinations and obtain laboratory specimen
7. evaluate and manage
   a. common problems of the healthy child
   b. minor illnesses
8. counsel parents
9. assist in the management of emergencies
10. care for newborn infants
11. make home visits
12. handle telephone calls

In June of 1969, the experimental project ended and the program was incorporated in the continuing education department of the School of Nursing of the University of Colorado. Basic content and learning experiences remain the same, but emphasis is now placed on nursing assessment of infants and children, nursing management of common problems of children, and the nurse's role in community child health. Approximately 90% of the instruction for the program is by nurses who have completed the Colorado program. The course may be taken for University credit, either in two eight week blocks or in one sixteen week semester.

A program to prepare pediatric nurse practitioners is also conducted by the Department of Nursing and Children's Service of the Massachusetts General Hospital and Northeastern University Center for Continuing Education.[29,30,31] The program began in 1968 because of interest generated by a course in ambulatory

child health care offered as an in-service education program at the Massachusetts General Hospital. So enthusiastic was the response to this course that it was decided to introduce a pediatric nurse practitioner program as part of the Bunker Hill Health Center project. The program was developed by Dr. John P. Connelly and Dr. Alfred Yankauer, with funding from the Children's Bureau and the Commonwealth Fund. Dr. Connelly and Dr. Yankauer became medical co-directors and Priscilla Andrews became nursing director of the program. In September, 1970, the program became associated with the Northeastern University Center for Continuing Education. Also at that time, a tuition fee of $1,000.00 for part-time trainees and $2,000.00 for full-time trainees was initiated since the program was no longer supported by the Children's Bureau.

The Massachusetts General Hospital pediatric nurse practitioner program is a four month course, designed as a part-time, on-the-job, continuing education program. The course includes three hundred hours of time, divided equally between classroom teaching and clinical practice. Part-time students spend one-and-a-half days per week in classroom and clinical practice settings. Also required are four half-day clinical experiences with the faculty of the program, two weekend workshops, in which role changes are explored, and four hours per week of pediatrician preceptorship in the employer's work setting. Arrangements have been made to admit some full-time students to the program. Most of the additional time per week for full-time students is spent in clinical practice. Nurse-trainees admitted to the program must be a licensed registered nurse, and must already have a job or have promise of a job. Also, the nurse-trainee's employer must guarantee that the nurse will have the opportunity to function in the expanded role of practitioner in her work, pediatrician preceptorship during the course, opportunity for continued on-the-job teaching after completing the course, and opportunity for consultation and guidance from professional nursing

personnel. The faculty for the program are the directors listed previously plus selected faculty from Northeastern University College of Nursing, Harvard School of Public Health, the Massachusetts General Hospital, and community health agencies.

The purpose of the pediatric nurse practitioner program is to provide an educational program which is a practical approach to the problem of meeting pediatric manpower needs so that more children can receive comprehensive care, both curative and preventive. The objectives of the program are: "... (1) to prepare registered nurses for the specific role of pediatric nurse practitioners within a primary pediatric ambulatory care setting; and (2) to promote change in current practices of delivering ambulatory pediatric health care."[32] The pediatric nurse practitioner prepared by this program is described as a "mid-level health professional" who shares significant responsibility for primary care-taking activities with the physician. Her responsibilities are to:

1. Acquire patient data through history taking (family, social, medical, and developmental) and total well child appraisal using techniques usually associated only with physicians....
2. Screen children who present a health problem or injury....
3. Assume major responsibility for management and follow-up care by phone, office, or home visit of children with acute illness or injury after diagnosis and prescription by the pediatrician....
4. Collaborate with physician in management and follow-up of children with minor developmental problems....
5. Coordinate the implementation of patient care through 'out-reach activities' such as home, hospital, and school visiting, and through guidance of parents to appropriate community resources.
6. Give treatments and medications as prescribed by physician in medical management or within protocol mutually agreed on by physician and nurse....
7. Plan and implement individual or group teaching sessions for a selected group of children and/or parents around such areas as: newborn care, child rearing, minor developmental problems, long-term illness, obesity, etc.
8. Share responsibility with the physician for the quality and efficiency of patient care services....[33]

The program is based on ten concepts and assumptions. These are:

1. The teaching program is designed as a continuing education effort that helps to prepare nurses 'on-the-job' for a specific role within a specific setting where they are already working or have contracted to work.

2. The underlying philosophy is that of adult education and is differentiated in terms of the unique needs of graduate nurses who are adult learners....
3. The potential of registered nurses has not been fully utilized in ambulatory care. Many responsibilities which nurses are already prepared, and can be prepared, to assume are now assumed by pediatricians.
4. Expansion of the nursing role to achieve the full potential of the nurse will improve the quality of pediatric caretaking in the setting which employs her.
5. The assumption of an expanded role by the nurse makes it necessary for her to relinquish non-patient care tasks of a technical and clerical nature.... In this process of change, the physician remains responsible for medical direction and medical decisions, but stops doing these things the nurse can do better; the nurse stops doing what aides and technicians can do better; more aides and technicians are added to the team.
6. The setting which can best sustain such a role should function as the primary source of both preventive and curative care for all children in a family....
7. Changes in medical and nursing role responsibilities within a primary caretaking setting are preferable to creation of a new type of 'mini-doctor' as a means of relieving health manpower shortages.
8. The key principle to such a change is the 'link-up' of nurse and pediatrician so that the nurse has direct access to a constant stable medical back-up and consultation source and the pediatrician has direct access to a single source of nurse caretaking....
9. For the nurse this role has aspects of what has been traditionally regarded as public health nursing, but depth in clinical pediatrics and assessment skills have been added, raising the level of nursing responsibility and decision making, and increasing the degree of individual nurse-doctor communication so as to create a new 'team-collaborative' approach to patient care.
10. The addition of such technical skills as use of the otoscope and stethoscope is regarded as no more than a short step beyond use of thermometer and sphygmomanometer,... These tools are <u>not</u> used by the nurse for medical diagnostic purposes. They are used for screening purposes: to distinguish between normal and abnormal....[34]

The content of the course seeks to provide additional competencies in history taking and recording, counseling and teaching, assessment of the total health status of children, follow-up of children in the home and the community, and collaboration with medical and other health professionals. Also discussed are the decision making process, the conflict of role reorientation, teamwork and interprofessional relations, and the problems of the delivery of health services to children and their families. The Faculty of the College of Nursing of Northeastern University along with alumnae of the nurse practitioner program are responsible for a series of continuing education programs for nurses who have

completed the four month program.

A third pediatric nurse practitioner program is conducted at the University of Rochester by the Departments of Pediatrics and Nursing Education of the School of Medicine and Dentistry.[35,36] The program was a result of the experiences of nurses and physicians working together in the Pediatric Continuity Clinic. Since 1966, nurses have worked with pediatric residents to provide well child care, habilitative care for sick and disabled children, and acute illness screening for children in the House Officer's Continuity Clinic at Strong Memorial Hospital. In 1967, with funding from a Children's Bureau Training Project, a nurse-physician team in the Continuity Clinic demonstrated that well child care could be performed efficiently and acceptably by the nurse. In 1967, the pediatric nurse practitioner program was officially begun under a grant from the Children's Bureau Research Program. The program is of four months duration, and has as its main objective, preparing "... the nurse to share with other members of the health team the responsibility for care of children and their families." Following completion of the course, the nurse is expected to have skills in the following:

1. Providing health assessment of children from birth to adolescence.
2. Providing individual, creative, preventive, and therapeutic care and counseling to children and their families, promoting habilitation and rehabilitation.
3. Providing preventive, diagnostic and therapeutic services for circumscribed conditions and illnesses of childhood.[37]

The course content includes class discussions of the goals of the nurse and the team, growth and development of the infant and the child, the child as a member of the family and community, monitoring the physical condition of the child by physical examination, meeting the needs of the infant, child, and family through specific preventive measures and creative nurse counseling in child-rearing and family living, and the child who is ill. Clinical practice with physician preceptorship is provided.

In 1970, a grant proposal was developed by the Department of Nursing and other clinical departments of the School of Medicine and Dentistry to establish a demonstration program of continuing education for nurses in expanded and collaborative roles in the delivery of primary health care.[38] The project was to have expanded the pediatric nurse practitioner program and introduced, on a phased basis, training for other nurse practitioners in the fields of internal medicine, obstetrics, and psychiatry-mental health. The proposal was not approved. Subsequently, Dr. Barbara Yates of the Department of Medicine, and Miss Joan Lynaugh of the Department of Nursing Education, submitted a planning proposal to the Division of Nursing of the U. S. Public Health Service for the development of a curriculum and a collaborative nurse-physician team model to prepare nurse practitioners in the ambulatory care of adult medical patients.[39] This project was approved and funded. Also submitted to the Division of Nursing was a training project proposal developed by Dr. Robert A. Hoekelman of the Departments of Pediatrics and Health Services, and Mrs. Harriet Kitzman of the Departments of Nursing Education and Pediatrics.[40] The project proposed to gather data on key aspects of pediatric nurse practitioner training, such as selection of trainees, methods, and content of training, and expected performance of graduates of training programs, so as to provide information on which training programs could make informed decisions. This project has been approved but not funded.

The University of New Mexico School of Medicine has prepared a family nurse practitioner.[41] This practitioner has undergone six months of training and works in a rural clinic. Her responsibilities include: well-child and well-baby care, such as observing growth and development, administering immunizations, supervising feeding, and counseling; assisting in routine health assessments of adults and older children; screening patients with acute illnesses and implementing therapy

in accordance with predetermined guidelines or through telephone consultation with a physician; assisting in the home care of invalid and chronically ill patients; and providing interval nursing observations of patients with diabetes, congestive heart failure, pregnancy, etc. who are under the care of physicians.

Other programs are also designed to prepare nurse practitioners, but at the master's level. Wayne State University College of Nursing in conjunction with the Henry Ford Hospital of Detroit has developed a two year course to prepare health nurse clinicians.[42,43] The program is composed of core courses plus courses in areas of special interest. At the end of the first year of study, the student chooses an area of specialization for intensive study. The program is designed to prepare clinicians to meet the health needs of adults with specific problems. Two essential features that separate the health nurse clinician from other nurses are described: "the scope and depth of her assessments and the exercise of nursing initiative and judgment." The preparation of the health nurse clinician will prepare her to:

1. Complete initial health-illness interview when individual is seeking medical attention.
2. Complete health-illness history.
3. Conduct physical assessment by which health care needs are identified.
4. Develop plan of care and related action inclusive of short and long-term goals and make referral to health resources when appropriate.
5. Convey data to and collaborate with the attending physician and other relevant health personnel.
6. Guide health personnel in the implementation of the health care plan through demonstration and other teaching, consultation and collaboration.
7. Participate in direct nursing care.
8. Interact with patients, family and staff to evaluate the effectiveness of patient care.
9. Initiate changes in the provision of care through analysis of patient and family needs and utilization of available resources.
10. Identify health problems which can be met through group work and provide leadership for group development.
11. Enrich and expand the nurse clinician role by identifying problems which she might deal with due to the uniqueness of her position.[44]

The health nurse clinician is visualized as being able to work in a variety of situations such as: the hospital, including inpatient units, emergency room, special care units, and clinics; outpatient clinics; patient's homes; public health agencies; extended care facilities; nursing homes; physician's offices; neighborhood health centers; school systems; and industry.

The University of California, School of Public Health began a program in 1970 under the direction of Dr. Jean French to prepare public health nurses as family health practitioners.[45, 46, 47] The program is eighteen months in length and leads to a master of public health degree. The family health practitioner will be prepared so that she can:

1. Identify the health status of the individual and family through taking a thorough history, performing a complete physical examination, and initiating appropriate diagnostic and screening tests.
2. Assume responsibility for clinical management (described later).
3. Determine the need in the management of health problem for a referral to a physician or other helping person or agency, and know the appropriate resource to which this referral should be made.
4. Avoid fragmentation of care and coordinate patient care by correlating pertinent clinical and social information...Interprets information, when appropriate, to patient and/or family and other agencies concerned with providing service.
5. Provide counseling, guidance, and health instruction to the individual and family....
6. Look at the health problems of her patients in the aggregate so that she will recognize emerging community health problems and help initiate appropriate interventions through community action.[48]

The applicant to the program must be a qualified public health nurse with a baccalaureate degree who has had a minimum of two years of experience in a community setting. The program is divided into three phases. Phase I is primarily the educational segment, and provides the student with the majority of the background information she will need to function as a family health practitioner. It covers two quarters of the academic year and is composed of theory and associated clinical laboratories. The theory includes a clinical medicine course, a nursing seminar, courses in statistics, genetics, immunology, epidemiology, and family planning, and electives chosen on the basis of individual needs and

interests. The clinical laboratory is related to the content of the clinical medicine course. Phase II of the program is also two quarters in length and is the applied clinical phase. Students will be able to practice their skills of providing comprehensive family health care in a primary care setting. Lectures in clinical medicine and nursing seminar will continue. Phase III is composed of six months of rotating clinical field experiences in all types of settings, such as group practice, rural settings, out-patient clinics, neighborhood health centers, and health departments. The student will work under supervision to increase her ability to function with increased responsibility and independence.

The scope of service of the family health practitioner will include:

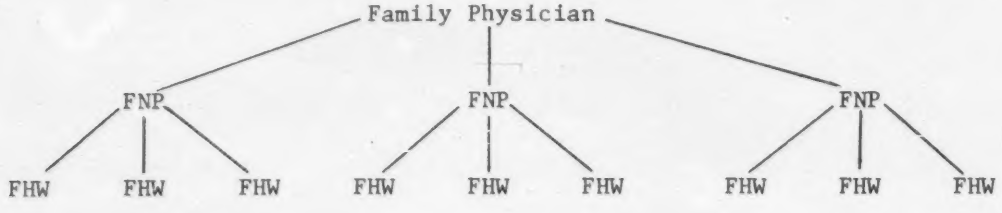
1. Infant, pre-school and school-age children
   a. The family health practitioner will assume responsibility for management of well children, including evaluation of physical and psychosocial development using a standard accepted format such as the Denver Developmental Test; initiating immunizations; providing support and counseling the mother on growth and development and dietary schedules; and being prepared to recognize physical abnormalities and deviations from normal growth and development patterns which need the physicians' attention.
   b. The family health practitioner will treat uncomplicated illnesses such as URI, otitis media, skin eruptions, and common infectious diseases of childhood. The nurse practitioner will have the ability to differentiate between uncomplicated illness and those which require the physician's expertise.
2. Adult
   a. Maternity
      During the course of pregnancy and the post-partum period, the family health practitioner will assume responsibility for uncomplicated obstetrical care. After an initial examination by the physician, the nurse practitioner will take responsibility for determining pelvic measurements, fetal size and position, fetal heart sounds, maternal weight gain, blood pressure, urine analysis, and other laboratory tests as indicated. She will provide anticipatory guidance as indicated. She will differentiate those conditions requiring consultation with, or referral to, the physician....
   b. Family Planning
      The family health practitioner will assume a major responsibility for family planning activities. She will work with the couple, in consultation with the physician, to determine the contraceptive method best suited to the individual needs and preferences of the couple. The nurse practitioner will do a complete physical examination, including pap smear, where appropriate; prepare the

patient for the chosen method of contraception, or make the necessary referral. The nurse practitioner will be constantly aware of unfavorable sequelae of different contraceptive methods and base her judgment on this awareness. She will counsel the couple in the use of their chosen method of contraception, and will provide guidance, support and appropriate follow-up.

c. Chronic Illness
The nurse practitioner will be responsible for the medical supervision of those patients in a relatively stable phase of their illness, and shall be prepared to recognize those complications or exacerbations which require consultation with, or referral to the physician. The diagnostic classifications she will manage include: hypertensive cardiovascular disease; arteriosclerotic heart disease; arthritis, both rheumatoid and degenerative; exogenous obesity; psychophysiologic reactions; diabetes mellitus; and chronic respiratory disease.

d. Acute and Emergency Care
In acute emergency situations, the nurse practitioner will be responsible for taking appropriate action as dictated by the situation. In many situations, she will be in an ambulatory setting where people will present themselves with a variety of symptoms. The nurse practitioner may assume responsibility for taking a thorough history, examining the patient, and initiating such diagnostic tests as seem appropriate. Based on her clinical impression, she will initiate treatment if it is within her scope of confidence, or make the necessary referral.[49]

In September, 1971, the Family Nurse Practitioner Program will be moving to the Department of Family Practice at the University of California, School of Medicine in order that students in the nurse practitioner program may have experience with both medical students and residents in Family Practice. A Family Practice Model has also been developed, in which three family nurse practitioners will be backed by a physician, and will be assigned three family health workers:



A third program leading to a master's degree is the Macy Program sponsored by the Boston College Graduate School, the Boston College School of Nursing, Graduate Program in Maternal and Child Health Nursing, the Harvard Medical School Departments of Obstetrics and Gynecology and of Pediatrics, the Boston Hospital for Women, and the Children's Hospital Medical Center.[50] The program is being developed to prepare clinical specialists in Maternal and Child Health Nursing, in either maternity or pediatric ambulatory care. It is supported by the Josiah Macy, Jr. Foundation. The program is being planned and will be taught collaboratively by nurses and physicians. The primary goal of the program, which will begin its first class in the fall of 1971, is to prepare nurses as clinical specialists in an expanded role. The long-range goal of the program is to"effect change in the system of health care delivery in order to provide quality health care for all families." The following major concepts form the framework for the curriculum:

1. acknowledgement by both professions that a more effective model of health care delivery may be one where nurses and physicians jointly provide primary, consultative, and specialty service in a setting where individuals come for ambulatory maternity care or where families bring their children for preventive services, for health maintenance and promotion, and intervention when children are ill;
2. acknowledgement of the trend to more effective utilization of the nurse to her greatest capability in the delivery of health care;
3. the concept of collaboration by the nurse clinical specialist and the physician as the core of the health team with joint responsibilities for quality health care to mothers and infants, and children;
4. preparation of nurses to work as colleagues with physicians;
5. an education of the nurse which will be concurrent with that of the physician to facilitate the changing roles in both medicine and nursing; and
6. utilization of the resources of both medicine and nursing in planning, developing, implementing, and evaluating the curriculum.[51]

The variety of programs preparing nurse practitioners has produced practitioners with varying length and depth of preparation. A resultant question is: do all of these practitioners function on the same level, perform the same kinds

of skills, and carry similar responsibilities? Or, does the difference in preparation lead to a difference in ability and responsibility? These are questions that have not been sufficiently answered to date and require more investigation. It is possible that there is a difference in the level of performance, with some nurse practitioners functioning in a role which requires more independent judgment, broader responsibilities, and less close or direct supervision of the physician. Examples of this level may be nurse practitioners prepared by the University of Colorado pediatric nurse practitioner program, the University of New Mexico family nurse practitioner program, the University of California family health practitioner program, and the Wayne State University health clinician program.

The second level may find nurse practitioners functioning in roles where responsibilities are somewhat more specific or circumscribed, where less independent judgment is required, and where the association with a physician is more direct. Examples of this level may be the nurse practitioners prepared by the Massachusetts General Hospital pediatric nurse practitioner program and the University of Rochester pediatric nurse practitioner program. These classifications are arbitrary and fail to take into account the fact that some practitioners, no matter what their preparation, will practice at a higher or lower level than other practitioners prepared in the same manner. Kitzman, of the University of Rochester pediatric nurse practitioner program, has defined three levels of child care-taking by pediatric nurse practitioners (see Table I). It is imperative that further evaluation and investigation be carried out to determine what levels of practice exist or are desirable, what factors or characteristics are necessary for successful functioning at a specific level, and what kind of education or experience prepares a person to function at a specific level.

Table I

Levels of Child Care-Taking by Pediatric Nurse Practitioners[52]

| Level of care | Well-Child Physically & Developmentally | | Chronically Ill and/or Disabled Child (Physically, Developmentally, Psychosocially) | | Parent Characteristics |
|---|---|---|---|---|---|
| | Preventive care | Acute problem or Illness | Habilitative or ongoing care | Acute illness with which basis chronic illness has altered normal responses | |
| A | Previously diagnosed well child who requires basic assessment and basic anticipatory guidance and teaching. | Specific circumscribed conditions requiring pattern of care changes. | | | Parents adequate in meeting child's needs and respond to teaching and directions by health team. |
| B | Physically, temperamentally or developmentally difficult child who requires individualized teaching and counseling. | Circumscribed illness requiring evaluation of severity and treatment by medication under standing orders. | Stable disability requiring family understanding and acceptance of level of functioning and basic needs. | Specific Circumscribed conditions requiring pattern of care changes appropriate to level of functioning. | Parents unable to respond to basic teaching because of limitations or relations with the child and require individualized teaching and counseling. |
| C | | More encompassing illness requiring evaluation and individualized treatment. | Disability or disease requiring ongoing modification of medical and nursing care regime with decisions made by nurse. | Circumscribed illness requiring evaluation of severity and treatment appropriate to the acute illness and chronic disability. | Parents unable to respond to individualized teaching and counseling because of their basic limitations and require coordination and collaboration with community agencies outside the health team. |

In order to guide the establishment of quality programs to prepare pediatric nurse practitioners and to maintain adequate standards of child care, the American Nurses' Association and the American Academy of Pediatrics jointly developed guidelines for short-term continuing education programs preparing pediatric nurse practitioners.[53] The guidelines suggest goals and objectives of the program; planning, organizing, and administration of the program; and services necessary for the conduction of a program. Functions, responsibilities, and competencies of the pediatric nurse associate (practitioner) are outlined, and guidelines for faculty responsibility and preparation, course content, admission of students, length of program, and ongoing evaluation of the program and its graduates are established.

These attempts to extend and expand the nurse's role through little or no additional training besides on-the-job training, through continuing education programs conducted by universities and health care institutions, and through educational programs leading to advanced preparation in nursing constitute one approach to increasing the productivity of existing health care personnel to bridge the gaps in the health care system. Criticisms leveled at such programs center around questions such as: Is this the most appropriate use of a nurse's skills and education? Is this adding to the real or imagined shortage of nurses? What is the legality of nurses functioning in such roles? Is harm done to nursing as an independent profession?[54]

## The Physician's Assistant

The third solution to the health manpower shortage, that of training new types of allied health personnel, is demonstrated by the training and use of physician's assistants. The range of preparation for the physician's assistant seems to vary even more than that for the nurse practitioner. Programs range from an eight week program to train opthamalogist's assistants to a five year program to train child health associates. The fact that the AMA has advocated training nurses as physician's assistants[55] also adds to the confusion in training programs. Five programs preparing physician's assistants will be described.

One of the best known programs is the Duke University Physician's Assistant Program.[56, 57, 58, 59, 60] The program was begun in 1965 by Dr. Eugene Stead of the Department of Medicine to meet two specific perceived needs: the need for more highly skilled technical personnel to work in special diagnostic and therapeutic units within the Duke University Medical Center, and the need for broadly trained personnel to assist primary care physicians. In 1967, the program was transferred to the Department of Community Health Sciences. The program is two years in length, is divided into two parts, and leads to a certificate rather than a degree. The first nine months of the program are primarily didactic. The first six weeks include lectures in the history, philosophy and ethics of medicine, medical records and terminology, basic laboratory procedures, and elementary physiology. This is followed by six months of a coordinated series of lectures in anatomy, physiology, disease processes, pharmacology, clinical diagnosis, principles of therapy, and laboratory procedures. There is also instruction in history taking and completion of a physical examination. The final six weeks of the first part of the program are spent in instruction in physical diagnosis, community health, electrocardiology, radiology, and data processing. The second part of the program is a fifteen month period of a series of clinical

rotations. These rotations include experiences in the in-patient services of the hospital, out-patient and emergency clinics, and offices of practicing physicians. The physician's assistants are taught to: take a history, do a physical examination, record their findings, present them in an organized way to the physician, do technical procedures, and instruct patients. The activities of a physician's assistant may vary depending on the practice setting and the individual physician. Stead describes the intended role of the physician's assistant prepared at Duke:

> The physician's assistant is seen as a new category within the structure of the health field designed to provide a career opportunity for men functioning under the direction of doctors and with greater capabilities and growth potential than informally trained technicians. As the title implies, these individuals would be trained to assist the doctor in his clinical or research endeavors in such a way as to facilitate better utilization of available physicians and nurses. Graduates of the program are viewed as individuals capable of performing responsibly and reliably certain of the skills currently practiced by doctors, nurses, and technicians.[61]

Estes differentiates the role of the physician's assistant from that of the nurse by stating that they do not make nursing diagnoses or do bedside nursing care. Their role also differs from that of a nurse in that

> 1) they work for an individual physician who assumes responsibility for the validity of all activities, 2) they work in several physical locations, depending on the doctor's needs, over a work day whose length coincides with that of the doctor, and 3) they carry out data-gathering and treatment functions using the tools of the physician - the stethoscope, the ophthalmoscope, the sigmoidoscope, etc.[62]

The requirements for admission to the Duke University program are a high school diploma and three years of previous medical experience, one of which must have been in direct patient care. Most of the trainees have received their experience as hospital corpsmen, most are men, and most have had one or two years of college.

The MEDEX Program at the University of Washington admits former medical corpsmen who have had experiences in independent duty stations or situations in their service experience and trains them for three months at the University

of Washington School of Medicine.[63, 64] This phase of the training is aimed at developing ability to take a history, complete parts of the physical examination, screen patients, provide home and nursing home care for patients with chronic illnesses, perform minor surgical procedures, such as applying and removing casts and suturing minor lacerations, and assisting during surgery. The initial phase of the program also attempts to assist the medex to make the transition from military to civilian medicine and introduces him to the practical administrative aspects of private practice. Following the completion of the first phase, the medex must complete a twelve month preceptorship, in which he learns to function as a particular physician's assistant. An interesting aspect of this program is that the physician-preceptor must agree to hire the medex following the successful completion of the preceptorship.

The Bowman-Gray School of Medicine of Wake Forest University began its Pediatric Assistant training program in 1969.[65] The program is two years in length and accepts students with two years of college or experience as a medical corpsman. The curriculum consists of six months of didactic teaching and eighteen months of clinical practice. Emphasis is placed on growth and development, preventive medicine, nutrition, family-child relationships, and physical norms. The pediatric assistant is prepared to assume responsibility, under the direction and supervision of a physician, for well-child care. In so doing, he may take a history and do a physical examination; screen for vision, hearing and developmental level; identify deviations from normal; give counsel on growth and development, behavioral problems, nutrition, and preventive procedures; and provide medical and preventive services, such as performing and interpreting skin tests and immunizations, advising on management of minor medical problems, arranging immediate provision for emergency care, and referring to the physician any significant illness, abnormality, or behavioral problem.

Two programs preparing physicians assistants award baccalaureate degrees on completion of a four year program. Alderson-Broaddus College in West Virginia has begun a program which accepts high school graduates.[66, 67, 68] The program is four years in length and is designed to prepare assistants who have both a breadth and depth of education. The physician's assistant prepared by Alderson-Broaddus is viewed as a health professional who works directly under the supervision of a physician. The physician's assistant is responsible first to the physician, and then, through the physician, to the patient. His role and function are personally defined by the employing physician. It is felt that in order for the physician's assistant to function satisfactorily in his role, he must be educated to identify with the physician's thought patterns. This is described as achieving the "mind-set" of the physician. Myers states that because of the educational background and preparation of the physician's assistant, he is more like the professional nurse than like any other health worker. He understands and performs many skills essential to patient care and has a comprehensive concept of the nature of illness. He is unlike the nurse because of his personal relationship to the physician and his more geographically mobile responsibilities. The curriculum includes liberal arts courses, as well as courses related to the medical sciences; such as anatomy, physiology, biochemistry, pharmacology, pathology, microbiology, biomedical physics, medicine and surgery. Also included are introductory courses in the major medical and surgical specialties and an overview of the history, philosophy, and ethics of medicine. Clinical experience in physician's offices, hospitals, medical schools, and clinics is also a part of the program. The duties of the physician's assistant prepared at Alderson-Broaddus College are described as follows:

A. In a Hospital
   1. Make daily rounds with the physician, taking notes to record on the progress sheet.
   2. Take histories.
   3. Give I.V. injections.

4. Change routine dressings.
5. Make separate rounds (morning or evening, before or after the physician's rounds) reporting any unusual findings to the physician.
6. Do electrocardiograms, basal metabolism tests, cystometrograms, etc.
7. Write orders as requested by the physician.
8. Assist in the operating room as first assistant in minor and second assistant in major operations.
9. Apply and/or adjust traction apparatus, casts, etc.
10. Determine residual urine.
11. Assist in various treatments and tests being carried out by the physician, or perform those in which the physician's assistant has been trained, and in which he has become proficient.
12. See patients in the emergency room, administer first aid, order any necessary x-ray or other laboratory work, and report to the physician.
13. Conduct training courses for aides of various types.
14. Counsel patients on tension-producing factors and situations, diets, etc.
15. Such other duties as the supervising physician may direct and/or assign.

B. In a Physician's Office or Clinic

1. Greet the patient, evaluate the overall problem, take the history, order routine and/or obviously needed laboratory and x-ray work, do such specialized tests as audiometric studies, tests for vision, visual fields, and screening types of neurological examinations, blood pressure, etc.
2. Take dictation (in longhand) during the physician's examination,
3. Answer telephone, make appointments, and record messages.
4. Maintain supply of diet sheets and instructions to patients for various diseases, and explain them to patients.
5. Make appointments with consultants.
6. Keep record of the professional appointments and engagements of the physician.
7. Be responsible for the overall management of the physician's office.
8. Make room reservations for patients at the hospital.
9. Schedule operations.
10. Give first aid.
11. Make travel arrangements to medical meetings for the physician.
12. Keep records and special files of possible research projects.
13. Do simple laboratory tests, such as urinalyses, blood counts, etc.
14. Send fee for calls or office visits, or charges for hospital calls, operations, etc. to clerk or business manager.
15. Make routine calls in an extended care unit or nursing home to determine whether the physician's services are needed.
16. Such other duties as may be assigned by the physician himself.
17. Carry out such technical, developmental, and research projects as the physician's assistant's basic knowledge, innate ability, and supplemental education or training will permit him to undertake, under the guidance of the physician.[69]

The University of Colorado has initiated a program to train people with little or no prior health background or training to function as a child health associate.[70, 71] These associates will complete two or more years of undergraduate work, two years of course work at the University of Colorado Medical Center, and a one year internship which will emphasize pediatric ambulatory care. The curriculum will follow the chronological development of the child from prenatal life to adolescence. Following the completion of two years of undergraduate work and two years of work at the medical center, the child health associate students will be awarded a baccalaureate degree. The year of internship will be similar to that of a pediatric intern, but will emphasize experiences in outpatient departments, private physicians' offices, and other community facilities. Little time will be spent in the hospital. Emphasis will be given to the areas of diagnostic pediatrics, preventive pediatrics, community pediatrics, care of well children, and care of children with minor illnesses. The graduates of this program "... will be qualified to diagnose, counsel, and prescribe for both well and sick patients" within established limits. The child health associate will function under the personal and direct supervision of a physician at all times. It is expected that the child health associate will practice in one of two practice settings: in private pediatricians' and general practitioners' offices or under the supervision of physicians in public health departments.

The National Academy of Sciences has developed three classifications of physician's assistants:

> The Type A Assistant
>
> The Type A assistant is capable of approaching the patient, collecting historical and physical data, organizing these data, and presenting them in such a way that the physician can visualize the medical problem and determine appropriate diagnostic or therapeutic steps. He is also capable of assisting the physician by performing diagnostic and therapeutic procedures and coordinating the roles of other, more technical, assistants. While he functions under the

general supervision and responsibility of the physician, he might, under special circumstances and under defined rules, perform without the immediate surveillance of the physician. He is, thus, distinguished by his ability to integrate and interpret findings on the basis of general medical knowledge and to exercise a degree of independent judgment.

The Type B Assistant

The Type B assistant, while not equipped with general knowledge and skills relative to the whole range of medical care, possesses exceptional skill in one clinical specialty or, more commonly, in certain procedures within such a specialty. In his area of specialty, he has a degree of skill beyond that normally possessed by a Type A assistant and perhaps beyond that normally possessed by physicians who are not engaged in the specialty. Because his knowledge and skill are limited to a particular specialty, he is less qualified for independent action. An example of this type of assistant might be one who is highly skilled in the physician's functions associated with a renal dialysis unit and who is capable of performing these functions as required.

The Type C Assistant

The Type C assistant is capable of performing a variety of tasks over the whole range of medical care under the supervision of a physician, although he does not possess the level of medical knowledge necessary to integrate and interpret findings. He is similar to a Type A assistant in the number of areas in which he can perform, but he cannot exercise the degree of independent synthesis and judgment of which Type A is capable. This type of assistant would be to medicine what the practical nurse is to nursing.[72]

Estes further describes and discusses these three types of assistants:

Type A is qualified to act as the primary patient contact, collect historical and physical data, pursue positive findings to an appropriate depth, and then organize and report the data in a manner that enables the physician to visualize the problem and determine the next appropriate steps. He can also perform diagnostic and therapeutic procedures specified by the physician and coordinate the roles of other, more technical assistants.

This type of assistant might be allowed to perform in settings apart from the direct supervision of the physician, providing the limits on his autonomous activity were clearly defined--such as which conditions or findings require the attention of the physician.

A formal program of at least two years would be required to train this type of assistant. The program should emphasize a high concentration of physician instruction and should include heavy input by all of the major professional areas of medicine--surgery, medicine, pediatrics, psychiatry, and obstetrics-gynecology. The child health associate being trained at the University of Colorado and the physician's assistant being trained at Duke University exemplify this type of assistant.

> Type B may be characterized as the "assistant specialist". His function and training are concentrated on a narrower range of knowledge and action, but within a limited area, the depth of his training and skill are surpassed only by the MD specialist whom he serves. His usefulness is limited in primary care settings. His range of independent action is limited, but in his special function, his skill may exceed that of the average physician. The coronary care assistant being trained at Emory University is an example of this type of personnel.
>
> Training of the Type B assistant also requires a heavy concentration of physician instruction, and usually involves a formal period of instruction focused on the special field of interest by specialists in the field.
>
> Type C resembles the Type A Assistant in the range of supporting services he would provide in primary care settings, but his formal training is more limited in the depth and breadth of the theoretical base. This type of physician's assistant would work under the close and direct supervision of the physician. Under these circumstances, he might provide as much support as the Type A assistant in performing a variety of specific tasks with proficiency, but he would be less capable of performing independently and away from the surveillance of the physician. The "Medex" now being trained at the University of Washington is an example of the Type C assistant.[73]

The American Academy of Pediatrics has also prepared guidelines for the training of pediatric office assistants.[74]

Several criticisms have been leveled at the preparation and utilization of physician's assistants. One basic one is whether there is a need for a new occupation to provide primary health care or whether existing allied health occupations should be expanded to assume more of the duties and responsibilities of physicians. It is argued that expanding existing occupations will establish career ladders for these occupations and will produce more immediate results because less time will be needed to expand existing occupations than to develop a new occupation.[75] On the other hand, use of existing personnel may further deplete occupations already suffering from a shortage. This is a problem particularly related to the training of nurses as physician's assistants. A major proposed source of trainees for physician's assistant programs is discharged medical corpsmen. Approximately 32,000 men with some medical care experience

are discharged from the service annually. Approximately 10,000 have enough health care experience to qualify for training programs, such as Duke University's program. A much smaller number have adequate independent duty experience to qualify for programs such as MEDEX.[76]

Another major criticism has been that use of physician's assistants in direct relation to physicians will do little to alleviate the shortage of physicians in rural and inner city areas, but will only provide another layer in the pattern of maldistribution of health manpower. Little attention has been paid to the effect technological advances and changes in the organization of health services will have on the delivery of health care. This may alter the role and function of the physician's assistant as now proposed.[77]

It seems likely that some basic differences between nurse practitioners and physician's assistants can be described. It is also apparent, however, that certain aspects of the duties of nurse practitioners and physician's assistants overlap. The nurse practitioner is usually someone who has already completed preparation as a registered nurse, but who has had additional training to add new skills, such as ability to complete a physical examination and additional knowledge in clinical medicine, and to review or augment her existing skills, such as interviewing and counseling. The additional training prepares her to assume responsibilities as an associate of a physician, providing primary and follow-up health care to patients. The degree of her dependence or independence varies, but her duties are always supervised by a physician. The physician's assistant may be a person with little or no medical background, although some programs require trainees to have some background in health care, such as that provided by experience as a medical corpsman or practical nurse. The training program prepares the physician's assistant to assume a dependent position in relation to the physician. Many of the functions described for the physician's assistant

are of a technical nature, and his activities are directed by the physician. Some assistants are prepared to function more independently, but they are still supervised by physicians. The overlap and indistinct lines between the nurse practitioner and the physician's assistant are areas needing more examination. It is possible that there is room for both the nurse-practitioner and the physician's assistant in the health care system, but in order to prevent costly duplication of education and services and in order to provide the most efficacious health care, the relationship of nurses and physician's assistants needs to be carefully defined.

Evaluation of Nurse Practitioners and Physician's Assistants

Evaluation of the performance of allied health personnel in providing primary health care is an important aspect in examining the utilization of these workers. Of primary concern is the quality of care provided. Do allied health professionals provide the same, or at least a safe and acceptable, level of care as physicians. Probably the most systematic attempt to evaluate the quality of care provided is that done by Lewis and Resnik, in their study of nurses providing primary care to chronically ill patients at the University of Kansas Medical Center.[78] Clinic patients were selected representing five major diagnostic categories of chronic disease. All of the patients were pre-tested using an attitude scale and a personality test and were interviewed to obtain background information. Specific objectives were written for each patient and standard orders were established for each of the diagnostic categories. The patients were randomly assigned to either a control group, in which the patients received regular care from house officers in the medical clinic, or an experimental group, in which the patients received care from a nurse with consultations with a physician as necessary. There were no differences between the patients in the control group and the patients in the experimental group on the initial testing in relation to frequency of complaints, illness behavior, or preference for the nurse or doctor. After one year, the patients were retested using the same methods and instruments as used in the pretest. The results showed no significant change in the control group. However, significant changes were apparent in the experimental group. There was a decrease in the frequency of complaints and in the tendency of the patients to seek a doctor's advice for minor complaints. The experimental group also showed a marked shift in preference for the nurse to do certain procedures or functions. The frequency of missed

appointments between the control group and the experimental group was also significant, with the experimental group having fewer missed appointments. The patients in the experimental group experienced fewer days of hospitalization as compared to the control group (34.3 hospital days per 1000 patient days of observation)(126.1 hospital days per 1000 patient days of observation). Clinic visits were shorter for the experimental group. A time and motion study revealed the following:

| Distribution of Time | Control | Experimental |
|---|---|---|
| Waiting | 58.0 | 5.5 |
| Clerical | 4.0 | 3.5 |
| Professional | 35.0 | 49.0 |
| Total | 97.0 | 58.0 |
| Range for professional time | 19-64 | 25-74 |

The cost of care, as well as patient satisfaction as measured by the number of visits to "outside" physicians was lower for the experimental group than for the control group. One-half of the control group patients went to outside physicians during the year before and the year of the experimental clinic. Seventy per cent of the experimental group went to outside physicians in the year before the clinic and only 13% of the experimental group went to outside physicians in the year of the experimental clinic. In reviewing the charts of both the experimental and control groups, it was found that while fewer nurse clinic patients had had examinations of the eyes, ears, abdomen and lungs, three times as many nurse clinic patients had had pelvic and rectal examinations done on referral from the nurse. Also, almost all of the nurse clinic patients had had routine laboratory screening tests for detection of latent disease done, while only one-third of the medical clinic patients had had these tests done. In commenting on the results of this study, Lewis and Resnik state that the nurses "... have offered care consistent with the patient's needs (biologic and social), focused on a person and his family, rather than on his disease."[79]

When this study was replicated in a metropolitan general hospital where private physicians, rather than house staff, saw the patients, experimental group patients evidenced a 40% increase in employment whereas control group patients decreased in employment. The frequency of symptoms, number of visits to outside physicians, and rate of broken appointments was lower in the experimental group than in the control group. The differences were statistically significant.[80]

In evaluating the results of this study, Lewis, et al. comment.

> It might be suggested that the differences in outcome were related not to the patients selected for the study...or to the abilities of the practitioners caring for them, but to the different processes of care emphasized by physicians and nurses. The former are more concerned (and appropriately so) with the biologic and technical aspects of diagnosis and treatment of disease. Nurses, on the other hand, described their activities in terms of supporting-role functions - more consistent with the majority of needs of the chronically ill.[81]

Lewis and Resnik caution, however, that

> The greatest risk is that some may assume that "nurses" in general, with additional training and supervision, can accomplish the results described.... The degree of responsibility and capability for decision making in patient care described requires the educational background that baccalaureate nursing educators have promoted. A significant amount of practice experience on in-patient and ambulatory patient services is essential.[82]

One concern of many physicians and others interested in the use of allied health professionals is the ability of these non-physician personnel to accurately assess the health status of patients. A study by Silver and Duncan[83] to evaluate the skills of the nurse by comparing the outcome of nurse and pediatrician assessment of 180 children (half ill, half well) found that there were few "overreferrals" by the nurse and no more missed diagnoses than would be expected in a routine pediatric practice. Seacat and Schlachter reported that physicians involved in the Montefiore Hospital Medical Group's demonstration project expressed concern that the public health nurses providing prenatal and pediatric care might not recognize medical or other complications that should be reported. After working with the

nurses, the physicians found that they "never missed anything" and began having increased confidence in their ability.[84]

Productivity is also a measure of evaluation. Do allied health personnel increase the number of patients that a physician can care for or free his time so that he can devote more time to reading, research, or family life. Silver reports that an analysis of the performance of pediatric nurse practitioners over a one year period revealed that the nurses were able to care for 82% of the children seen in a child health field station by themselves. Eighteen per cent were referred to a physician or medical facility. Fifty-four per cent of these visits were well-child care visits, while 46% were for care of ill or injured children. Pediatric nurse practitioners associated with private physicians have been found to provide the physician with one-third more time for patient care, reading, attendance at meetings, etc.[85] Silver estimates that the work of three pediatric nurse practitioners can replace approximately the work of one pediatrician.

Two pediatricians in private practice who employed a nurse practitioner found that they could be more selective in the time they spent with their patients. They also noted an 18.8% increase in the number of patient visits and a profit of $9,000.00 in the year the nurse practitioner was employed.[86]

Yankauer, reporting on the results of a questionaire mailed to twenty-two pediatricians in private practice who had employed a pediatric nurse practitioner for at least eight months, noted that the respondents reported improved quality of care. This improvement was reported to be related to the nurse assuming responsibility for counselling and/or the physician being able to spend more time per visit and select cases requiring more intensive input from himself. Five respondents indicated that the quality of care was unchanged but the number of patients in the practice had increased; eleven indicated that they spent more time for each patient visit. About half of those responding reported increased

numbers of new patients and volume of patient visits per week. Only two reported spending less of their own time in practice. Yankauer estimates that four pediatric nurse practitioners are equivalent to one pediatrician. He feels that the true equivalency ratio may be closer to two to one, but factors such as the slow full acceptance of the nurse by doctors and the period of time it takes for the nurse's patient load to build up makes the equivalency ratio more than that.[87]

Estes and Howard report that by using a physician's assistant, the physician's patient care output can be increased by 30-50%.[88] However, the use of nurse practitioners or physician's assistants may not necessarily increase the physician's time or the number of patients seen, as more time may have to be devoted to supervision of the assistant by the physician. Physicians may also choose not to increase case loads, thus reducing the number of hours he spends in practice.

Acceptance of the nurse practitioner or the physician's assistant is important if they are to be utilized effectively. Acceptance must come from essentially three groups: patients and families, physicians, and other health professionals. Most reports have indicated that patients and families have accepted the nurse practitioner and have been satisfied with the care provided.[89] A study carried out by the Department of Pediatrics of the University of Colorado School of Medicine was designed to elicit information about the acceptance, approval, and satisfaction of parents with the care their children had received after a pediatric nurse practitioner had joined the practice of a private pediatrician.[90] A questionaire composed of questions concerning the services and care provided in the office, home, and hospital and the ability of parents to communicate with the physician were given to the parents of all patients seen by both the pediatrician and the nurse practitioner during a four week period. A 72.3% response rate was received (i.e. 68 of 94 families). The replies were

divided into two groups: "old" patients and "new" patients. "Old" patients were defined as patients who had been coming to the practice prior to the time when the pediatric nurse practitioner joined the practice. "New" patients were defined as patients who had begun coming to the pediatrician after the nurse practitioner had joined the practice. "Old" patients accounted for thirty-seven replies; "new" patients accounted for thirty-one replies. 94% of the respondents said they found services to be as good or better than those formerly received. 48.5% of the "old" patients indicated that services were better; 42.9% indicated they were the same; and 8.5% indicated they were not as good. 78.6% of the "new" patients felt that the care was better than they had expected or received elsewhere; 21.4% felt that care was the same; and none of the "new patients felt that care was worse. When questioned about interference with their ability to communicate with the pediatrician, 91.5% of the respondents indicated they had encountered no significant interference. 52% of the "new" patients and 22.2% of the "old" patients felt that their ability to communicate with the pediatrician had improved; while 47.8% of the "new" patients and 63.9% of the "old" patients indicated that there had been no appreciable change. Ninety-five per cent reported satisfaction with the pediatric nurse practitioner. 67.7% of "new" patients and 44% of "old" patients replied that the presence of the pediatric nurse practitioner made it easier to receive satisfactory answers to their questions. Twenty-nine per cent of "new" patients and 47.2% of "old" patients felt that it made no difference. 3.2% of the "new" patients (one mother) and 8.3% of the "old" patients (three out of 36) indicated that the pediatric nurse practitioner made it more difficult to obtain answers to questions. Other services, such as home visiting, neonatal hospital visits, and telephone service were reported to have improved by the majority of respondents receiving

these services. When asked if they favored association of the nurse practitioner with the physician, 95.4% replied in the affirmative.

Schiff, et al.[91] and Skinner[92] also report positive parental acceptance of allied health workers providing care. The Montefiore Hospital Medical Group demonstration project was constructed to provide information on patient acceptance of public health nurses providing primary prenatal and pediatric care.[93] The project found that most of the patients readily accepted the plan. A few of the patients had difficulty developing trust in the nurse. Some were accepting of the nurse, but requested extra visits with the physician because husbands or other family members were not as accepting. The most accepting group tended to be primiparas. The mothers tended to be more accepting of the nurse at the end of their experience with her providing pediatric care than they were at the end of their prenatal experience. The majority were reported to be indifferent at the end of their prenatal experience to the choice of having care provided by the nurse and the obstetrician together or by the obstetrician alone; but at the end of the pediatric experience, the majority indicated that being seen by both the nurse and the pediatrician was preferable to being seen by the pediatrician alone. Seventy-five per cent of the respondents indicated that they did not feel that the care provided by the nurse interferred with their relationship with the pediatrician. Ninety per cent said that the nurse clarified information given by the pediatrician and provided additional information. The majority of patients responded favorably to being able to discuss questions or problems with the nurse rather than bother the pediatrician. Twenty-five per cent indicated they would rather discuss some problems with the nurse rather than the pediatrician. The majority of patients in both obstetrical and pediatric experiences reported that, if given the chance again, they would want the services of the public health nurse.

Estes and Howard report that the acceptance of physician's assistants by patients has been good. A study by Dr. Louis Pondy and others at Duke University showed some correlation of income and educational level with acceptance of the physician's assistant. Patients of the highest and lowest income levels were more reserved in their acceptance than patients of the middle income level. Persons with higher educational backgrounds tended to be more accepting than persons with lower educational backgrounds.[94] Lewis reports on two studies carried out by the Group Health Cooperative of Puget Sound, Washington. Patients were interviewed immediately after their visit to a physician's assistant to elicit degree of satisfaction with the care provided. Seventy-two per cent of those interviewed rated the care as highly satisfactory. Twenty-five per cent rated the care as satisfactory.[95]

Information on physician acceptance is limited. Most of the available information comes from surveys of or communications with physicians who already employ nurse practitioners or physician's assistants. Yankauer reports on the results of a questionaire mailed to twenty-two pediatricians in private practice who had employed a nurse practitioner for at least eight months. The results indicate "... uniform enthusiasm..." on the part of the pediatricians.[96] Estes reports finding more favorable attitudes towards physician's assistants among physicians than in 1968.[97] Information on acceptance by other health professionals is even more limited.

The cost of training allied health personnel has an effect on the usefulness of these workers. While accurate cost analysis data does not appear to be readily available, some rough estimates have been made. Yankauer puts the total cost of preparing one pediatric nurse practitioner at $2,500.00.[98] Estimates from other nurse practitioner programs indicate that it costs approximately $1,000.00 per

nurse for the four month training program. The physician's assistant program at Duke University requires about the same resources per year to train a physician's assistant as those required to train a medical student. Therefore, since the training period for a physician's assistant is shorter than that of a physician, one less physician must be trained for every three physician's assistants that are trained.[99]

Another important measure of evaluation is to determine if graduates of the programs are functioning in the roles intended and using the skills which they have been taught. Estes reports that of the 41 graduates of the Duke University physician's assistant program, fifteen are employed at the Duke University Medical Center. Two-thirds of these are employed by individual physicians and function in a manner similar to that of their counterparts employed in community practice settings. The other third employed at the Duke University Medical Center function in various administrative capacities. Twenty-six of the forty-one graduates are employed in physician's offices throughout the country.[100]

Figures from the Massachusetts General Hospital pediatric nurse practitioner program show that of 106 graduates, 82 are employed in comprehensive care settings, such as private and group practices, out-patient departments, satellite clinics, and children and youth projects; 24 are employed in other types of settings, such as the Visiting Nurse Association, hospital pediatric inpatient units, home care projects, and school departments.[101] Earlier reports[102] indicated that nurse practitioners who were employed in private practice settings and health center settings, such as the Bunker Hill Health Center, children and youth projects, satellite clinics, and home care programs had greater opportunity to carry out a variety of patient care services and had greater opportunities to contribute to continuity and comprehensiveness of services than nurse practitioners functioning in other settings, such as the Visiting Nurse Association, school departments, and hospital inpatient departments.

Before the issue of who can best provide the necessary care to patients and assistance to physicians, the nurse practitioner or the physician's assistant, is resolved, more thorough evaluations will need to be done. Lave et al. comment that:

> Virtually all reported evaluations of paramedics* are based on experience with specially trained nurses. Thus, it is difficult to distinguish good paramedic care from good nursing care. It is possible that what many patients need is good nursing care, a service neither physicians nor paramedics (except those with good nursing backgrounds) are prepared to deliver. The difficulty cannot be resolved without further evaluation of the non-nurse paramedic.[103]

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* Paramedic is defined in this article as a "... health care provider who performs primary care tasks formerly reserved for the physician."

Issues and Concerns

Some essential questions and issues are raised by the use of non-physician health personnel which remain to be answered. These include questions such as how this health worker should be reimbursed for his services, career mobility, the effect of the training of these personnel on existing medical and nursing education, whether this new health worker should be licensed or certified and the degree to which liability is increased, and the effect on role relations.

Reports in the literature show little research on how non-physician primary health care workers should be reimbursed. The American Medical Association endorses a fee-for-service system. Most reports indicate that physician's assistants and nurse practitioners are being paid a salary, but in some cases the patients are charged on a fee-for-service basis for services of the nurse-practitioner.[104] Several questions arise then. Should non-physcian personnel be paid on a fee for service basis; should they be paid a salary; or should they share in the profits of the practice on a percentage basis? How much should patients be charged for the services of non-physician personnel? How much should these non-physician workers be paid if a salary is paid? Yankauer reports a survey of pediatricians using nurse practitioners charged from $5.00 to $8.00 for a nurse only well child check-up without immunizations, with half of the respondents reporting a fee of $7.00. Doctor's visits ranged from $7.00 to $12.00, with half reporting a $10.00 fee. In four out of twenty-one instances, the fee for a nurse visit and a doctor visit was the same ($7.00 or $8.00). In all other instances, the charge for a nurse visit was $2.00 to $3.00 less than that for a doctor visit.[105] Little is available on specific charges for services of the physician's assistant. There are some reports of amount of salary paid. Silver recommends that nurse practitioners be paid from one-quarter to one-third more

than other nurses.[106] Some sources report the salary of a nurse practitioner as being approximately $8,000-$9,000. Estes[107] reports that the salary of the Duke physician's assistant is approximately $10,000; and Smith[108] suggests $8,000 to $12,000 as the beginning salary for the medex.

Another important aspect related to the question of reimbursement policies concerns whether or not third party payers, such as Blue Cross-Blue Shield, Medicare, and Medicaid will or should pay for the services of nurse practitioners or physician's assistants. Reports from the experience of the nurse clinic project at the University of Kansas indicate that they would not pay for a visit to the nurse clinic unless a physician "saw" the patient at each visit and signed the chart.[109]

Career mobility and the type of education provided for nurse practitioners and physician's assistants are interrelated issues. Lave, et al. define four main dimensions of career mobility: vertical, horizontal, geographic, and temporal. Vertical mobility is defined as "... the ease with which a person can use and augment his knowledge and training to qualify for a 'higher' level profession." Horizontal mobility is "... the ease with which a person may augment his training by transferring to the same level in a similar health profession." Geographical mobility is defined as "... the ease with which a professional may find similar employment in various areas of the country." Temporal mobility is defined as "... the ease with which (a professional) can keep abreast of the technological changes in his specialty."[110] Perry discusses two ideas of career mobility; the concept of career ladders, in which vertical mobility is possible; and the "lattice" concept, in which horizontal or lateral transfer between health professions is possible.[111] Career mobility is necessary in order to produce job satisfaction and high level performance. The question is: Do the jobs of nurse practitioner and physician's assistant have career mobility, or are they dead-end jobs? How can the nurse practitioner and physician's assistant advance?

The ease with which health care personnel can move and adapt is related to the organization of health care services and the health education system. Over- or under-education for a specific job can result in dissatisfaction and frustration. Here, the issue of broadly based general education versus specific apprentice type of training arises. It is generally thought that a broad based general education would provide more mobility than training which prepares a person for a specific job.[112] It is also felt that physician's assistants should be trained in institutions that prepare several health occupations, as this would increase the opportunity for lateral mobility.[113] The development of a core curriculum for medicine, nursing, and other allied health professions is seen as a means of augmenting career mobility. Core curriculum is also seen as having these additional advantages: facilitating the development of the team concept among allied health professionals, increasing efficiency in the use of existing facilities, simplification of the varieties of existing curricula, and the opportunity to present existing information in a more comprehensive manner.[114, 115] There are some problems involved in a core curriculum, however. Duncan and Kempe suggest that students may find it difficult to learn about other health professions when they are in direct competition with them for patients, facilities, or faculty time. There may be conflicts about the importance of medical knowledge versus the importance of social and environmental factors influencing the patient's health status. Also, it is not known when in a health professional's education it is best to have joint experiences with other health professionals.[116] Other factors which delay the implementation of a core curriculum are lack of precise information on what different allied health professions require as preparatory course work, restrictive accreditation and licensure requirements, and resistance from lack of communication or ambiguity of understanding.[117]

How do nurse practitioner programs and physician's assistant programs relate to existing nursing and medical education? Should nurse practitioner programs be continuing or in-service education programs or should they be in the mainstream of nursing education? Can the knowledges and skills taught in these programs be incorporated in either collegiate or higher education nursing programs? Andrews, et al. report that, in their experience with the Massachusetts General Hospital pediatric nurse practitioner program, nursing education background had no relationship to the successful performance of the role of nurse practitioner. The only area in which educational background did make a difference was in the understanding of growth and development of children and in the analysis and discussion of interviewing techniques. Trainees who have not had a college-level course in growth and development are now required to take one before or concurrently with the training program. Andrews, et al. state that they believe that both the content and the clinical experience of the nurse practitioner program could be included in a collegiate nursing program, and urge that their program be considered only a stopgap measure to meet urgent needs.[118] The University of Colorado program originally required applicants to have a master's degree, but found that the knowledge and skills were learned quickly. A baccalaureate degree is currently accepted.[119] Lewis and Resnik believe that a baccalaureate education with experience in in-patient and ambulatory care services are necessary to make decisions and assume the level of responsibility required by the nurses providing care in the clinics at the University of Kansas.[120] There is little real definitive data to substantiate these beliefs or feelings. It is necessary to explore why educational background does not make a difference in the level of performance, if it does not, and what factors are or should be included in various levels of education. Ingles believes that if the delivery of health care is to become effective at a cost which can be supported, a system of graded skills and

responsibilities must be developed.[121] The next problems then become that of deciding what education or training is necessary for a person to perform certain skills and responsibilities, and how and where this can best be done.

The introduction of new allied health personnel and the use of existing personnel in new roles has raised questions about the legality of their activities under existing medical and nursing practice laws. The main questions seem to involve whether or not physicians can delegate patient care tasks to these health workers or does this constitute the illegal practice of medicine, and does the use of physician's assistants particularly increase risks of liability to the physician. Most sources[122, 123, 124] agree that the risk of liability for the physician is probably increased. However, medical tasks can properly be delegated to paramedical personnel, but only if they are performed under the direction and supervision of the physician. The degree of risk is lessened when the assistant is competent and the physician is aware of the assistant's competence and does not delegate tasks which goes beyond the assistant's competence. Much concern is evident over whether physician's assistants should be certified or licensed. Some[125,126] feel that the licensing of physician's assistants would legitimatize what remains an ill defined and changing concept. Licensure it is felt, could trap the physician's assistant in a specially detailed role that would allow little room for experimentation in the preparation and use of the assistants. On the other hand, others contend that licensure is necessary in order to prevent new types of professionals from extending their activities beyond their capabilities and reasonable limits.[127]

Lack of licensure, or at least some form of legal recognition, presents certain legal dangers. This may be seen as evidence that the activities of physician's assistants are illegal or that the physician's assistant is practicing medicine without a license, aided and abetted by the physician.[128] Some suggestions for

dealing with this dilemma include: traditional licensure of the physician's assistants themselves, special licensure for the supervising physician, creation of a new agency specifically designed to oversee all new types of allied health personnel, passage of a general statement authorizing the delegation of tasks under the supervision and direction of the physician, licensure of the educational institution preparing physician's assistants, or licensure of the facility employing physician's assistants.[129, 130]

Some states have already enacted legislation designed to regulate or legalize the use of physician's assistants. Colorado has passed legislation defining the role, functions, and limits of the child health associate.[131] California has enacted legislation. The California physician's assistant law requires that a physician supervise the activities of the assistant and that the Board of Medical Examiners approve the programs training the physician's assistants, the assistants themselves, and the physicians using assistants. Under the law, physicians are not allowed to supervise more than two assistants at a time and they must submit applications for approval to the Board which include the qualifications of the assistant, information on the physician's professional background and specialty, and a description of how he proposes to use the assistant.[132]

Concern is also expressed about the nurse practitioner. Is the nurse who is functioning in an expanded role participating in the unauthorized practice of medicine? Anderson[133] seems to find evidence to support the position that functioning in the expanded role does not constitute unauthorized practice of medicine. Important factors involved in this seem to be: that the nurse has received adequate training which will insure her competency to perform particular acts, that she has not demonstrated incompetency in the performance of these acts, and that a physician agrees that her performance is proper and promotes quality patient care.

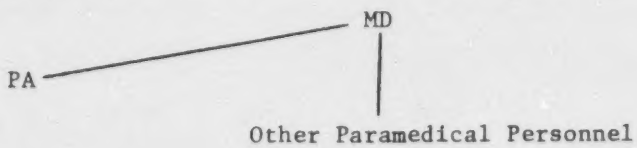
Many have expressed concern about and voiced opposition to the concept of the nurse practitioner. Most opposition seems to stem from concept confusion, disagreements about content and method of training, and problems in the adaptation of nurse and physician to the role changes and collaborative working relationships required.[134] Andrews and Yankauer[135] believe that many of the functions and skills included in the role of the nurse practitioner are not new to nursing and are increasingly being taught in basic nursing education. However, existing systems of health care have not allowed the nurse to utilize her potential, accept responsibility or display initiative, and assumption of a dependent role has resulted. Because of this, role reorientation of the nurse and role realignment between the nurse and the doctor are required. Silver[136, 137] also believes that role reorientation is required for the nurse practitioner. During this process the nurse must dissociate herself from previous modes of thinking and acting in order to develop the capacity to assume more responsibility and initiative. Silver feels that this cannot be done in "self-directed study or 'on-the-job' training," but must be done in a setting which is supportive of the new roles. Physicians must be involved in "authenticating" the nurse practitioner's new role. They need to become comfortable in transferring some of the functions and responsibilities they formerly assumed, to the nurse, and they need to become aware of the knowledge and skill which the nurse possesses. The new roles assumed by the nurse practitioner require adaptation on the part of the nurse and the physician and demand that they communicate and work closely in a collaborative relationship. Andrews and Yankauer caution that roles should not be rigidly defined, but should be flexible and may vary depending on the persons and circumstances involved.

Bates[138] feels that traditionally medicine and nursing have had a common goal, that of preserving and restoring health. The roles of physicians and nurses differ, offering them different perceptions of the patient's problems, but also overlap,

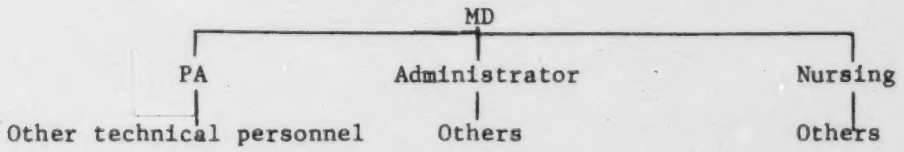
giving them common interests and concerns. The primary role of the physician is diagnosing and treating disease, the "cure" process. The primary role of the nurse is "caring, helping, comforting, and guiding," the "caring" process. The relationship between nurses and physicians is characterized by medical authoritarianism and acceptance of dependence by nursing. Physicians tend to view nurses as their helpers or technical assistants and nurses have functioned in constricted task-oriented roles. There are several reasons for this. First, the physician's role is that of a healer and demands a high degree of competence. The physician must be self-confident, and acknowledging a need for others may be felt to be conceding limitations. Also, the physician feels finally responsible for what happens to the patient. Nurses have not rebelled against this authoritariansim, and in fact many seek delegation of technical tasks as a means of obtaining professional prestige. The patterns of nursing organization tend to be ward-oriented rather than person-oriented, and separation of service from education has also separated the most highly educated nurses from contact with patients or physicians. In addition, medical education provides little experience with or knowledge of the potential contributions of other disciplines. Several socio-cultural factors may also be important in the relationship between doctors and nurses. Physicians tend to be men, but nurses are more likely to be women, so that the pattern of male dominance may play a part in the relationship. Also, physicians are usually older, tend to come from a higher socio-economic level, have a stronger base of knowledge, and have been given greater rewards and prestige by society than nurses. Because patient care is directed mainly at the diagnosis and treatment of disease, the nurse concentrates on performing tasks required to meet this objective and her potential for guiding, helping, and comforting patients is not met. Bates encourages roles in which the nurse utilizes more of her potential.

Van Leeuwen[139] states that mutual trust and openness are essential for a team to function. Physicians tend to control and monopolize the team situation, but health care is not the sole perogative of the physician any longer. Equality for all team members is needed in the process of "goal determination and decision-making." This requires role flexibility, especially on the part of the physician. Van Leeuwen questions if all team members, being fully qualified and capable, are of equal importance. If this is true, then is it necessary to have a constant hierarchical structure or could the team function under "functional leadership" (i.e. "The person within whose competence the center of the problem lies undertakes to lead the particular course of action")?

Question has also arisen about the role of the physician's assistant. What is his role? Is there a place for him in the existing health care delivery system? What effect does the physician's assistant have on other health care personnel? How well accepted is he by others? A study carried out at the Duke University Medical Center tried to answer some of these questions.[140] A series of interviews were conducted with ten physician's assistants, eight physicians employing physician's assistants, five other physicians, twelve nurses, eight technicians, four administrative personnel, and two other unidentified persons. The study found that while a personal role had been defined for each of the physician's assistants, no standard occupational role had evolved. All of the physician's assistants had one factor in common: their subordinate position to their supervising physician. Two patterns of relationship to the supervising physician were identified: "staff" and "line". In a "staff" type of relationship, emphasis is placed on the physician's assistant performing specialized functions as a "direct assistant-to-the-MD". The relationship tends to be collaborative and may be diagramed as follows:



In the"line" type of relationship, emphasis is placed on differences of rank. There may be one or more lines of command, and the physician's assistant has some supervisory responsibility. This type of relationship may be diagramed as shown below:




Acceptance of the physician's assistant by himself and by others was assessed. Self-acceptance was defined as "... satisfaction with current status, functions, and relations with others, as well as satisfaction with prospects for future career development in the role." Role set acceptance was defined as "... positive valuation of the physician's assistant, his function, and the emergent role by members of his role set."[141] Three patterns of acceptance were found: High self- and role set acceptance, low self-acceptance and high role set acceptance, and high self-acceptance and low role set acceptance. The physician's assistants in the high-high group had three characteristics in common: good personality and ability to deal with people, effectiveness and competence, and contribution to the efficiency of the health system. Each of the physician's assistants in this group were relatively satisfied in the role as they had at least one special and recognized competence and felt a sense of progress on the job. Physician's assistants in the group with low self-acceptance and high role set acceptance had many of the same characteristics as those in the high-high group. Low self-acceptance was attributed to the fact that their roles had not changed significantly from what they were prior to taking the physician's assistant program, their roles were not unique in the area in which they functioned, and the gap between their present position and what they perceived to be the ideal function of the physician's assistant could not be closed in their current position. Physician's assistants

falling into the high-low group (i.e. high self-acceptance, low role set acceptance) were satisfied with their role, but the people with whom they worked, while not strongly critical of the role of the physician's assistant, were not as enthusiastic about it as others. This was felt to be due to the non-clinical nature of the roles of these particular assistants, the fact that role set members saw the assistant performing only parts of his role, and the fact that the assistant did not affect the self-interest of any of the role set members, i.e. he was not viewed as meeting a pressing need in the operation of the area in which he was employed. Most of the physician's assistants in this group had administrative responsibilities. The investigation concluded that:

> Self-acceptance and satisfaction appeared to occur most frequently when the Physician's Assistant was playing a "staff" role as "assistant-to-the-MD"....But the "line" role gave the Physician's Assistant a set of functions similar to those of other paramedical personnel and not unique to the Physician's Assistant....
>
> However, role set acceptance appeared to be high when the role set members saw the Physician's Assistants as carrying out a set of functions visibly helping them in their own work....The conditions for role set acceptance seemed to be more nearly satisfied when the Physician's Assistant was playing a line role than a staff role.[142]

Lewis urges research into the consequences of role changes produced by the addition of new types of health workers to the organization of health care. He comments that

> Perhaps the most profound future problems will be related not to the unwillingness of the physician to accept assistants, particularly if they function under his control and within the scope of his delegation, or to the patient's refusal of care from an apparently competent source, but rather to the conflicts that may arise in organizations when new personnel are introduced. It might be speculated that solutions to the real problems of physician's assistants will depend on working out their relative functions with hospital administrators, nurses, and all those who are part of the "formal" organization. If the physician's assistant is unacceptable to the nurse, to the administrator, or to a variety of other health professionals and yet is forced by the physician's directive to work with them, there is ample evidence from sociologic studies that a variety of informal mechanisms will be developed to curtail the

physician's assistant's effectiveness and to limit his acceptance by the patients. The introduction of physician's assistants into organizational settings will have considerable impact on other members of the organization as they re-examine their territorial imperatives and sources of satisfaction and power.[143]

## Summary

The literature on nurse practitioners and physician's assistants was reviewed during a six week period in June and July, 1971 in order to provide information to assist the Community Planning Committee for Nursing Education in establishing guidelines for the development of future nurse practitioner programs in the Rochester-Genesee Valley Region.

The crisis in health care in the United States is well documented. Concern has been expressed about the shortage of health manpower, especially those providing primary health care. Adding to the problem of inadequate supplies of health care personnel, especially physicians, are maldistribution of personnel, increased specialization, increased demand for services, failure of health personnel to utilize new technology and organization, and inadequate methods of financing health care. Three main solutions have been advanced to deal with the health manpower crisis: increase the supply of health care personnel, increase the productivity of existing personnel, and train new types of allied health workers to extend the services of existing personnel, especially the physician. Since the outlook for increasing the number of physicians in order to meet the current crisis is not good, the latter two solutions are viewed as providing the means to extend and compliment the services of the physician. The preparation of nurses to assume expanded roles in providing primary health care, as demonstrated by the nurse practitioner programs, is one means of increasing the productivity of already existing personnel. The training and utilization of physician's assistants illustrates training new types of allied health personnel to extend the services of the physician.

Several surveys have reported that the majority of physicians favor delegation of tasks to qualified allied health workers. However, there appears to be some discrepancy between expressed approval of task delegation and actual practice.

Some factors which may impede delegation of tasks by physicians are conservatism, economic self-interest, specialization; the issue of final medical responsibility; viewing delegation as surrender of function rather than delegation; and more comprehensiveness of functions. Factors which favor delegation of tasks include group practice and the view that final medical responsibility is a shared group responsibility rather than an individual one.

Because a variety of programs have been established to train personnel to assume new roles in primary health care, confusion about titles, responsibilities, training, etc. have arisen. Three general levels of physician extenders are recognized: the associate level, the assistant level and the aide. All agree that it is necessary for the physician to supervise the performance of these health workers.

The roles of nurses have been expanded or extended through a variety of methods. Some projects have provided the nurse with inservice education or have made settings available in which the nurse could function in an expanded role. Examples of this are nurses at the University of Kansas Medical Center who provided primary health care to patients with chronic disease, and public health nurses associated with the Montefiore Hospital Medical Group who provided prenatal and pediatric care to the families using the group. Other programs have provided the nurse with additional specialized training in a continuing education type of program in a university or health care institution. Examples of this include the University of Colorado pediatric nurse practitioner program, the Massachusetts General Hospital pediatric nurse practitioner program, the University of Rochester pediatric nurse practitioner program, and the University of New Mexico family nurse practitioner program. Some programs are designed to prepare nurse practitioners at the master's level. These are Wayne State University, preparing health nurse clinicians, the University of California, preparing family health practitioners, and the Macy program, preparing clinical specialists in maternal and child health nursing.

The variety of programs has raised questions such as: Do all practitioners function on the same level, perform the same skills and carry similar responsibilities? Does the difference in preparation lead to a difference in ability and responsibility? There is insufficient evidence to definitively answer those questions. Based on existing information, however, two levels of function may be proposed. At one level nurse practitioners would function in a role requiring more independent judgment, broader responsibilities, and less close or direct supervision by the physician. At the second level, nurse practitioners may function in roles where responsibilities are more specific and circumscribed, where less independent judgment is required, and where the supervision or direction of the physician is more direct. Three levels of child care-taking by pediatric nurse practitioners have been defined. Each level deals with progressively more complex problems requiring greater knowledge and skill on the part of the nurse practitioner.

Guidelines for short-term continuing education programs preparing pediatric nurse practitioners have been developed jointly by the American Academy of Pediatrics and the American Nurses' Association. Criticisms of nurse practitioner programs center around the issues of inappropriate use of the nurse's skills and education, compounding the nursing shortage, the legality of such functions, and danger to nursing as an independent profession.

New types of personnel are being trained as physician's assistants. Some programs recruit persons with previous medical or health care experience and provide them with additional training, preparing them to be physician's assistants. Examples of these programs include the Duke University physician's assistant program, the MEDEX program at the University of Washington, and the pediatric assistant program at the Bowman-Gray School of Medicine of Wake Forest University. Other programs admit students to a four or five year program which leads to a Baccalaureate Degree. Examples of these programs are the physician's assistant program at Alderson-Broaddus College and the University of Colorado child health

associate program.

The National Academy of Sciences has defined three types of physician's assistants. Type A is capable of collecting data, integrating and interpreting findings, and exercising some independent judgment. Type B does not possess general medical knowledge, but is highly skilled in one particular area. Type C is capable of performing a variety of tasks but does not possess the level of general medical knowledge necessary to interpret findings and make independent judgments.

Several criticisms are leveled at the physician's assistant programs. The issue of whether a new occupation should be developed or existing health occupations expanded seems to be of major concern. Some feel that the use of physician's assistants will do little to extend health services into areas where none currently exist as the assistant provides only one more layer in the pattern of maldistribution of health manpower. Also, one of the major proposed sources for recruitment of trainees for physician's assistant programs, ex-medical corpsmen, is considerably less than estimated.

Initial evaluations of non-physician personnel performing primary health care tasks has been good. Evaluations of the quality of care provided by nurses indicate that they are able to provide care consistent with the needs of the patient, are able to assess the health status of individuals accurately, and seldom fail to report complications or conditions requiring the physician's knowledge and skill. Reports indicate that nurse practitioners increase the productivity of physicians and estimate that three to four nurse practitioners could replace approximately the work of one physician. Estimates from evaluations of physicians assistants indicate that the patient care output can be increased by 30-50% by using a physician's assistant. Studies of acceptability of nurse practitioners and physician's assistants show good acceptability of both by patients. Information on acceptance by physicians and other health professionals is scant.

The cost of training nurse practitioners is estimated to be between $1,000.00 and $2,500.00 for a four month continuing education program. It is estimated that the same resources per year are needed to train a physician's assistant as to train a medical student.

Certain issues and concerns are raised by the use of nurse practitioners and physician's assistants. Among them are how these non-physician personnel should be reimbursed for their services. No consensus has been reached on whether they should be paid by salary, reimbursed on a fee-for-service basis, or share a percentage of the profits of a private practice. Most are currently paid salaries, with reports of salaries of $8,000.00 to $9,000.00 for nurse practitioners and $8,000.00 to $12,000.00 for physician's assistants. Another important question is whether or not third party payers, such as Blue Cross-Blue Shield, Medicare, and Medicaid will pay for the services of a non-physician health worker. Experience to date has indicated that they will not.

Career mobility and the type of education provided non-physician personnel are interrelated concerns. Career mobility is described as having four dimensions: vertical, horizontal, geographic, and temporal. Career mobility is necessary in order to produce job satisfaction and quality performance. Career ladders do not seem to be available currently for nurse practitioners and physician's assistants. The degree of career mobility depends on both the organization of health services and the health education system. Over- or under-education for a job can reduce career mobility. Education should be fitted to the job, but also provide opportunity for advancement. Thus the argument of broad general education versus specific apprentice type of training for physician's assistants arises. Core curriculum is seen as having advantages as it augments career mobility, facilitates the development of the team concept among allied health professionals, utilizes existing facilities more efficiently, and simplifies existing curricula. Problems

arise, however, when students compete for faculty or facilities, conflicts develop over the relative importance of subject material, and accreditation and licensure requirements restrict teaching.

Concern about the legality of the activities of non-physician personnel providing primary health care and who is liable for negligence has been expressed. It is generally agreed that the physician can legally delegate tasks to other health workers, but he must supervise and direct them. Liability for the physician is probably increased, but competency on the part of the assistant decreases the risk. There are divergent opinions as to whether physician's assistants should be licensed or certified, or not. Some feel that licensure or certification would legitimize an ill-defined, experimental type of health worker or would unnecessarily restrict his activities. Others feel that licensure or certification is necessary to protect the interests and safety of patients. Alternatives for dealing with this problem include: licensing the physician's assistants, special licensure of the supervising physician, creation of a new agency to oversee all new types of allied health personnel, passage of a general statement authorizing the delegation of tasks under the supervision of the physician, licensure of the educational institution preparing assistants, and licensure of the facility employing physician's assistants. Colorado and California have enacted legislation dealing with physician's assistants.

The role of the nurse practitioner and the physician's assistant has not been expressly defined. Many feel that roles should not be specifically defined, but should be kept flexible and expected to shift with different persons and circumstances. In order for the nurse practitioner to function in her new responsibilities in association with a physician, she must undergo role reorientation. Also important is that physicians support and authenticate this new role. Role realignment between nurses and doctors is also necessary. Traditionally,

medicine has assumed an authoritarian role and nursing a dependent role. The use of teams and the development of collaborative roles requires role flexibility and equity for all members of the team.

One study has indicated that while a personal role has been defined for physician's assistants, no one occupational role has been defined. Self-acceptance of the physician's assistant role and acceptance by other members of his "role-set" have been mixed.

Conclusions

The confusion which exists concerning the use of allied health personnel in the provision of primary health care continues. The maze of programs and projects, both existing and planned, add to the confusion. There seems to be little agreement on anything, other than that some measures need to be taken to extend health care services to more people and to provide better health services. There is no agreement as to titles, functions and roles, preparation and education, place of practice, or effectiveness of the different types of personnel. But, it would seem that the confusion, the questions, and the issues raised have major implications for medicine, for nursing, and for society as a whole. Can nursing and medicine continue to practice in the traditional role-set and practice areas? Or, can both nurses and physicians change the traditional views they have held of each other and their areas of responsibility and competency? The development of the concept of the use of health teams to provide care and the establishment of a collaborative, associative relationship between physicians and nurses portends not only changes in the interprofessional relationship of the two groups, but also, and here may lie the real issue, changes in the way that men view women and the way that women view themselves. It would seem that there is some agreement that the organization and delivery of health care must change to some degree in order to provide a more equitable distribution and a higher quality of health care for the consumer. How the system changes remains to be seen, but it seems certain that changes in the system will affect the function of the nurse practitioner and the physician's assistant. Are the training and preparation of these professionals providing them with the flexibility to be able to adapt to changes? Is there, perhaps, room for both the nurse practitioner and the physician's assistant to function in providing health care? If so, how are the functions and responsibilities

of each to be defined? It would seem that the nurse's liberal background and her interest in and understanding of the psycho-social needs and relationships of individuals and families might prepare the nurse to function in a supportive, caring role in evaluating individual and family health needs, maintaining health and preventing illness through education, monitoring of health conditions, and assisting in the development of positive individual and family relationships. This would leave the physician's assistant to aid the physician in the diagnostic and therapeutic aspects of patient care.

If changes occur in the delivery of health services and in the roles of those professionals who are responsible for providing those services, then the education of those professionals must necessarily change. Can a collaborative role between nurses and physicians develop without some joint experiences on a beginning level? Can nursing and medical schools continue to prepare practitioners without some sort of collaborative relationship between them? Can a core curriculum be developed which would provide experiences in collaboration?

The essential fact which must not be forgotten and which should transmute all plans, all vested interests, is that ways must be found of providing better health care for all of the people. Can the use of allied health personnel, whether they be nurse practitioners or physician's assistants, or a combination of both, provide better health care? Initial reports are that it can. If so, means must be found to further implement equitable and quality health care.

In light of the information available and the issues and questions raised by the subject of nurse practitioners and physician's assistants, the following suggestions are made. It is suggested that:

1. continuing education programs to prepare nurse practitioners continue as an interim measure to prepare qualified personnel to function in expanded nursing roles in collaboration with physicians.

2. collegiate schools of nursing examine and revamp their curricula to include content and experiences which would prepare beginning practitioners to function in an expanded, collaborative role.

3. collegiate schools of nursing establish collaborative relations with schools of medicine for the planning and implementation of revamped medical and nursing curricula.

4. medical and nursing schools investigate the possibilities of establishing a core curriculum for medicine, nursing, and other allied health personnel.

5. a regional network of colleges, universities, and health care facilities be established as a cooperative effort to provide for educational and clinical practice experiences in order to make the most efficient use of existing resources.

6. community health agencies, institutions, and other health resources provide positions which would allow nurses to practice in expanded roles.

# Appendix A

## A Partial Listing of Programs Preparing Nurses to Function in Expanded Roles

A Partial Listing of Programs Preparing Nurses to Function in Expanded Roles*

| Title | Institution | Prerequisites | Length of Course | Credentials |
|---|---|---|---|---|
| Expanded Role of Nurse in Care of Child with long-term illness | University of Florida, School of Nursing Gainesville, Florida | | | masters degree |
| Family Health Practitioner | University of California School of Medicine Department of Family Medicine Davis, California | Baccalaureate degree in Nursing-grade pt. of 3.0 - 2 years of experience in community health nursing | 2 years | masters degree |
| Family Nurse Practitioner | Frontier Nursing Service Wendover, Kentucky | | Program being planned | masters degree |
| Family Nurse Practitioner | University of Arizona Tucson, Arizona | RN | 12 months | Pending |
| Family Nurse Practitioner | University of New Mexico Albuquerque, New Mexico | RN with nursing experience | 6 months (pilot project, training no longer in progress, evaluation being completed) | |
| Health Nurse Clinician | Wayne State University College of Nursing Detroit, Michigan | | 2 years | masters degree |
| Inservice Education for Ambulatory Pediatric Nurse | Comprehensive Group Health Service Philadelphia, Pa. | RN - diploma or degree | 12 weeks | none |

A Partial Listing of Programs Preparing Nurses to Function in Expanded Roles

| Title | Institution | Prerequisites | Length of Course | Credentials |
|---|---|---|---|---|
| Inservice Program for Extending the Role of the Public Health Nurse in Pediatric Care | Los Angeles County Health Department<br>Los Angeles, California | | | |
| Medical Nurse Practitioner | University of Rochester Departments of Medicine and Nursing Education<br>Rochester, New York | | Planning | |
| Nurse Physician Associate | Albert Einstein College of Medicine<br>Bronx, New York | | | |
| Nurse Physician Surrogate | Jacobi Hospital<br>Bronx, New York | RN | | Pending |
| Nurse Practitioner | North East Neighborhood Association Comprehensive Health Services<br>New York, New York | RN - B.S. or Public health nursing experience preferred | Proposed | |
| Nurse Specialist (nurse-midwife training program) | Catholic University<br>Washington, D. C. | | | |
| Pediatric Clinical Specialist | Yale University, School of Nursing<br>New Haven, Conn. | RN<br>B.S. | 2 years | masters degree |

A Partial Listing of Programs Preparing Nurses to Function in Expanded Roles

| Title | Institution | Prerequisites | Length of Course | Credentials |
|---|---|---|---|---|
| Pediatric Nurse Assistant | Division of Health Services Dept. of Preventive Med. University of Washington School of Medicine and School of Nursing Seattle, Washington | | | |
| Pediatric Nurse Associate | Good Samaritan Hospital Division of Community Pediatrics University of Cincinnati, College of Medicine, Cincinnati, Ohio | RN employed in ambulatory pediatric setting | 7 weeks | certificate |
| Pediatric Nurse Associate | Loma Linda University School of Nursing Loma Linda, Calif. | Sr. Yr. of BA in Nursing; or RN with BA; License in California | | certificate |
| Pediatric Nurse Associate | Methodist Hospital of Indiana Indianapolis, Ind. | RN from NLN approved school; Commitment from sponsor | 16 weeks | certificate |
| Pediatric Nurse Associate | Rush-Presbyterian-St. Luke's Medical Center Chicago, Ill. | RN - Commitment from pediatrician to be preceptor | 16 weeks | none |

A Partial Listing of Programs Preparing Nurses to Function in Expanded Roles

| Title | Institution | Prerequisites | Length of Course | Credentials |
|---|---|---|---|---|
| Pediatric Nurse Associate | University of Conneticut Health Center Hartford, Conneticut | RN license and BS | 4 months | certificate |
| Pediatric Nurse Associate | University of Maine Maine Medical Center Portland, Maine | RN - Licensed in Maine - Assured employment following graduation | 16 months | |
| Pediatric Nurse Associate | University of Virginia Dept. of Pediatrics Charlottesville, Va. | RN | 16 weeks | certificate |
| Pediatric Nurse Clinician | Memphis and Shelby County Health Dept. Memphis, Tenn. | RN - Diploma or Degree; Experience in health dept. | 16 weeks | certificate |
| Pediatric Nurse Practitioner | Cardinal Glennon Hospital St. Louis, Mo. | RN employed in pediatric ambulatory setting | 8 months | certificate |
| Pediatric Nurse Practitioner | U. S. Airforce Lackland AFB San Antonio, Texas | USAF RN - 2 years experience - one year in pediatrics | 21 weeks | certificate |
| Pediatric Nurse Practitioner | Mass. General Hospital Bunker Hill Health Center Charleston, Mass. | RN employed in ambulatory pediatric setting | 16 weeks | certificate |

A Partial Listing of Programs Preparing Nurses to Function in Expanded Roles

| Title | Institution | Prerequisites | Length of Course | Credentials |
|---|---|---|---|---|
| Pediatric Nurse Practitioner | University of Colorado School of Nursing Denver, Colorado | B.S. in Nursing from NLN approved school | 16 weeks | certificate |
| Pediatric Nurse Practitioner | University of Rochester Depts. of Pediatrics and Nursing Education School of Medicine and Dentistry Rochester, New York | RN | 4 months | certificate |
| Pediatric Nurse Practitioner | Washington University St. Louis, Mo. | RN; B.S. preferred | 1 year | certificate |
| Pediatric Nurse Practitioner | Wayne State University College of Medicine Detroit, Michigan | Completion of nursing course in accredited School | 4 months | certificate |
| Pediatric Nurse Practitioner | University of W. Virginia Medical Center Morgantown, West Va. | RN; pediatric nursing | 4 months | certificate |
| Pediatric Nurse Practitioner | Yale University Dept. of Pediatrics New Haven, Conn. | B.S. degree | | masters degree |
| Pediatric Nurse in Preceptorship | Contra Costa County Health Department Oakland, California | public health nurses of health department | 3 months (In-service) | |

A Partial Listing of Programs Preparing Nurses to Function in Expanded Roles

| Title | Institution | Prerequisites | Length of Course | Credentials |
|---|---|---|---|---|
| Pediatric Specialist for Public Health nurses | Allegheny County Health Department Pittsburgh, Pa. | Public Health nurses employed by Allegheny County Health Department | 18 weeks | certificate |
| Public Health Nurse in Child Health Conference | San Bernadino County Department of Health San Bernadino, Calif. | RN with B.S. - M.S. preferred; recruited from staff | Inservice Education: 40 hours of lecture and clinical experience | |
| Public Health Nurse Practitioner | Montefiore Hospital Neighborhood Medical Care Demonstration Project Bronx, New York | RN with B.S.; public health experience preferred | Inservice Education: clinical and classroom experience | |



* Compiled from:

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* Compiled from: (con't.)

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Reference List of Paramedical Training Programs in Pediatrics. Evanston, Illinois: American Academy of Pediatrics, June, 1971.

84

Appendix B

A Partial Listing of Programs

Preparing Physician's Assistants

A Partial Listing of Programs Preparing Physician's Assistants*

| Title | Institution | Prerequisites | Length of Course | Credentials |
|---|---|---|---|---|
| Anesthesia Assistant | Emory University School of Medicine Atlanta, Georgia | Undergraduate degree in physical or biological science acceptable scores on GRE | 2 years | masters degree |
| Child Health Associate | University of Colorado School of Medicine Denver, Colorado | H.S. diploma 2 years undergraduate work | 2 years and one year internship | Baccalaureate degree and certificate |
| Clinical Associate | University of Kentucky Albert B. Chandler Medical Center School of Allied Health Prof. Lexington, Kentucky | H. S. diploma Recommendation from physician | 2 years | certificate and diploma |
| Clinical Associate | University of Texas Medical Branch School of Medicine Galveston, Texas | H.S. graduate Preference given to those with hospital experience | 4 years | B.S. |
| Corpsman | Cleveland Clinic Hospital and Cuyohoga Community Hospital Cleveland, Ohio | Ex-military corpsman or individuals with some experience in health field. Acceptable H.S. and/or college grades | 1 year | certificate |
| Emergency Medical Technician | University of Pittsburgh Pittsburgh, Pa. | | 1 year | |

A Partial Listing of Programs Preparing Physician's Assistants

| Title | Institution | Prerequisites | Length of Course | Credentials |
|---|---|---|---|---|
| Medex | Department of Preventive Medicine<br>School of Medicine<br>University of Washington<br>Seattle, Washington | Experience as medical corpsman, with independent duty experience | 15 months | certificate |
| Medical Services Associate | Brooklyn-Cumberland Medical Center<br>Brooklyn, New York<br>Long Island University<br>New York | Personal Interview<br>Evidence of motivation and psychological adaptability | 2 years | certificate |
| Medical Specialty Assistants | Grady Memorial Hospital<br>Emory University<br>Atlanta, Georgia | H.S. graduate<br>2 years experience as medical corpsman, or similar background in health field. | 2 years | certificate |
| Orthopedic Assistant | City College of San Francisco<br>Pacific Medical Center<br>San Francisco, Calif. | H.S. graduate<br>Courses in biology, physics, Chemistry, Algebra, Geometry, recommended.<br>Education beyone H.S. at vocational, nursing, or college level is helpful. | 2 years | certificate (AA degree proposed) |
| Orthopedic Assistant | U. S. Public Health Service Hospital<br>Staten Island,<br>New York | | | |

A Partial Listing of Programs Preparing Physician's Assistants

| Title | Institution | Prerequisites | Length of Course | Credentials |
|---|---|---|---|---|
| Pediatric Assistant | Bowman Gray School of Medicine<br>Wake Forest University<br>Winston-Salem, N.C. | 2 years of college or university liberal arts and science courses. Individuals with special training and experience in medical and related fields may be given equivalency credits. | 2 years | certificate |
| Pediatric Assistant | Foothill Community College<br>Los Altos, Calif. | H.S. diploma<br>college entrance | 2 years | certificate |
| Pediatric Assistant | School of Allied Health<br>Georgia State University<br>Atlanta, Georgia | H. S. diploma<br>college entrance | 7 academic quarters | associate degree |
| Physician's Assistant | Alderson-Broaddus College<br>Philippi, West Virginia | H.S. graduate<br>college entrance<br>Preference given to medical corpsmen | 4 years | B.S. |
| Physician's Assistant | Duke University Medical Center<br>Durham, North Carolina | H.S. diploma<br>Previous experience in health field (at least 1 year involving extensive direct patient contact)<br>college entrance<br>Preference given to those with 2 or more years of college course work. | 2 years | certificate |

A Partial Listing of Programs Preparing Physician's Assistants

| Title | Institution | Prerequisites | Length of Course | Credentials |
|---|---|---|---|---|
| Physician's Assistant | Federal Health Programs Service<br>Division of Health Services<br>U. S. Medical Center<br>Springfield, Mo. | H. S. graduate<br>ex-military corpsmen with 3 1/2 years experience in nursing and experience in 2 specialties | 1 year | certificate |
| Physician's Assistant-Surgical | Marshfield Clinic<br>Marshfield, Wisconsin | | | |
| Physician's Assistant (with competencies in diabetes, oncology, gastroenterology, pediatrics, ophthalmology, neurosurgery, and general surgery) | Marshfield Clinic<br>Marshfield, Wisconsin | | | |
| Purser-Pharmacist Mate | Purser-Pharmacist Mate School<br>Public Health Service Hospital, Staten Island, New York | Marine pursers and medical corpsmen | 9 months | PHS certificate<br>License from Coast Guard |
| Surgeon's Assistants | University of Alabama<br>Birmingham, Alabama | H. S. diploma and completion of courses in chemistry, algebra, and biology<br>2 years of college with emphasis on the sciences | 2 years | certificate |

A Partial Listing of Programs Preparing Physician's Assistants

* Compiled from:

Connelly, John P. and Yankauer, Alfred, "Allied Health Personnel in Child Health Care," Pediatric Clinics of North America, 16:921-925, November, 1969.

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# THE NURSE PRACTITIONER: AN ANNOTATED BIBLIOGRAPHY

Areas Included:

- Related and General Background Information
  - Allied Health Personnel
  - Meeting Health Needs
- The Nurse Practitioner
- The Physician's Assistant
- Legislative and Legal Implications
- Nurse-Physician Relationships
- Books, Other Resources and Annotated Bibliographies

The Community Planning Committee for Nursing Education
Rochester and Elmira Areas
July, 1971

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# THE NURSE PRACTITIONER: AN ANNOTATED BIBLIOGRAPHY

## Related and General Background Information

"AMA Urges Major New Role for Nurses," American Medical News. 13:1+, February 9, 1970.

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Reviews the history of manpower studies which led up to the establishment of the Committee on Pediatric Manpower by the American Academy of Pediatrics. Summarizes the conclusions of a survey of Academy Fellows by the Committee which found that the majority of pediatricians surveyed favored delegation of tasks to allied health personnel. Defines three classifications of allied health personnel: the pediatric nurse associate, the pediatric office assistant, and the pediatric aide. Lists existing training programs for the pediatric nurse associate and the pediatric office assistant.

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Summary of study evaluating "the potential role of the Frontier Nursing Service in training health manpower to meet the needs of Kentucky." Recommends expansion and modification of Frontier Nursing Service Graduate School of Midwifery to develop a master's degree program in comprehensive family nursing.

Ford, Loretta C. and Silver, Henry K. "The Expanded Role of the Nurse In Child Care," Nursing Outlook. 15:43-45, September, 1967.

Description of the pediatric nurse practitioner program at the University of Colorado, with particular emphasis on the nurse's expanded role.

Ford, Patricia Ann, Seacat, Milvoy S., and Silver, George A. "The Relative Roles of the Public Health Nurse and the Physician in Prenatal and Infant Supervision," American Journal of Public Health. 56:1097-1103, July, 1966.

Public health nurses provided prenatal and pediatric care, in association with physicians, at the Montefiore Hospital Medical Group. "The Plan was readily accepted by patients as demonstrated in a reduction of visits to physicians as well as by patient's satisfaction with their care, with a majority stating a preference for the combined nurse-physician care."

Gozzi, Ethel. "Pediatric Nurse Practitioner At Work," American Journal of Nursing. 70:2371-2375, November, 1970.

Account of the activities of a pediatric nurse practitioner employed jointly by a private medical group and an OEO-sponsored rural health project.

Gross, Leonard. "Introducing....The Supernurse," McCalls. 75+, March, 1971.

Discusses use of nurse practitioners in providing health care by reporting experiences of personnel in settings where she has been used. Use of nurse practitioners may affect 4 major social issues: fee-for-service medicine; traditional utilization of nurses and the nursing shortage; improved and repersonalized health service for the consumer; and changes in the view of women.

"Guidelines on Short-term Continuing Education Programs for Pediatric Nurse Associates," American Journal of Nursing. 71:509-512, March, 1971.

A joint statement of the American Nurses' Association, Division on Maternal and Child Health Nursing Practice and the American Academy of Pediatrics which establishes guidelines in the areas of: functions and responsibilities of the pediatric nurse associate(practitioner), goals and objectives of the program, planning, organizing, and adminiministration, and services and facilities necessary for the conduction of a program to prepare pediatric nurse associates. It also establishes guidelines on faculty responsibilities and preparation, course content, admission of students, length of program, and ongoing evaluation of the program and its graduates.

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Duplication of and comparison with a study of nurses serving as the primary source of care for adults with chronic illnesses. This study examined the content of nurse-patient interactions, problems managed by the nurse, and outcomes of this care. It found that nurses tended to function more in a supporting role and that there were significant decreases in disability, discomfort, and dissatisfaction in the nurse clinics.

Lewis, Charles E. and Resnik, Barbara A. "Nurse Clinics and Progressive Ambulatory Patient Care," New England Journal of Medicine. 277:1236-1241, December 7, 1967.

Description of a project at the University of Kansas in which nurses serve as the primary source of care for adults with chronic illness. Results showed that nurses offered care consistent with patients' needs.

"Nurse Practitioners," Hospitals. 44:56-57, May 1, 1970.

Review of activities of nurses providing health care through the Frontier Nursing Service, Kentucky.

Schiff, Donald W., Fraser, Charles H., and Walters, Heather L. "The Pediatric Nurse Practitioner in the Office of Pediatricians in Private Practice," Pediatrics. 44:62-68, July 1969.

Experiences of two physicians in private practice working with a pediatric nurse practitioner. Reports on methods used to introduce the nurse into the practice, development of her role, types of visits managed by the nurse practitioner, and the results of her presence in the practice..

Seacat, Milvoy and Schlachter, Louise. "Expanded Nursing Role in Prenatal and Infant Care," American Journal of Nursing. 68:822-824, April, 1968.

Description of project at Montefiore Hospital Medical Group in which public health nurses provided prenatal and infant care in association with physicians. Patient and physicians acceptance of the nurse's care was high.

Silver, Henry K., Ford, Loretta C., and Stearly, Susan G. "A Program To Increase Health Care for Children: The Pediatric Nurse Practitioner Program," Pediatrics. 39:756-760, May, 1967.

Description of the pediatric nurse practitioner program at the University of Colorado.

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Silver, Henry K. and Ford, Loretta. "The Pediatric Nurse Practitioner At Colorado," American Journal of Nursing. 67:1443-1444, July 1967.

Description of the pediatric nurse practitioner program sponsored by the University of Colorado.

Silver, Henry K., Ford, Loretta C., and Day, Lewis R. "The Pediatric Nurse Practitioner Program: Expanding the Role of the Nurse To Provide Increased Health Care for Children," Journal of the American Medical Association. 204:298-302, April 22, 1968.

Describes the organization and content of the pediatric nurse practitioner program at the University of Colorado. Reports that nurses are able to give total care to more than 75% of all the children who come to them for care. Emphasizes need for physicians to "participate in authenticating the nurse's new role" and the fact that the nurse must undergo role reorientation in a setting which "allows and encourages the evolution of an expanded role for the nurse."

Silver, Henry K. "Use of New Types of Allied Health Professionals in in Providing Care for Children," American Journal of Diseases of Children. 116:486-490, November, 1968.

Description of the content and product of two programs at the University of Colorado designed to utilize "allied health professionals in providing increased health care to children": the pediatric nurse practitioner program and the child health associate program.

Stearly, Susan, Noordenbos, Ann, and Crouch, Voula. "Pediatric Nurse Practitioner," American Journal of Nursing. 67:2083-2087, October, 1967.

Description of the University of Colorado nurse practitioner program from the point of view of students in the program. Also describes the activities of the pediatric nurse practitioners in the child health stations during the second phase of their program.

"The Pediatric Nurse Practitioner in A Neighborhood Center," American Journal of Nursing. 71:513-515, March, 1971.

A pictorial account of activities of pediatric nurse practitioners at a Cambridge, Massachusetts, health center.

Wiedenbach, Ernestine. "Family Nurse Practitioner for Maternal and Child Care," Nursing Outlook. 13:50-52, December, 1965.

The author responds to a proposal that satellite community health units be established in which family nurse practitioners would provide most supervision during the antepartum and postpartum periods. Miss Wiedenbach discusses several problems inherent in the suggestion, as well as the responsibilities, qualifications, and preparation of this family nurse practitioner. She concludes that the knowledge, skills, and judgment necessary are found in a nurse-midwife.

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The Physician's Assistant

Anderson, Katherine H. and Powers, Lee. "The Pediatric Assistant," North Carolina Medical Journal. 31:1-8, January, 1970.

Report of a study "designed to analyze patient care tasks in two selected pediatric practices in small North Carolina towns and compare the results with similar studies of pediatric practices in the large urban-suburban medical school communities of Seattle, Washington and Rochester, New York" prior to the start of the Pediatric Assistant Training Program of Bowman-Gray School of Medicine of Wake Forest University. An appendix outlines the training program by providing a definition and job description of a pediatric assistant.

Bodie, Marilyn K. and Sandiford, Carol A. "Mental Health Associates: One Answer to the Manpower Shortage," American Journal of Nursing. 71:1395-1396, July, 1971.

A one year experience of work and weekly in-service education classes trains college graduates with social science majors to function as auxiliary personnel, aiding nursing staffs in therapeutic care of psychiatric patients in Georgia.

Breytopraak, Linda Marshall and Pondy, Louis R. "Sociological Evaluation of the Physician's Assistant's Role Relations," Group Practice. 18:32-33+, March, 1969.

Intervies with physician's assistants, physicians employing physician's assistants, other physicians, nurses, administrative personnel, and technicians were conducted to determine role functions, identity and acceptance of the physician's assistant. There is no standard occupational role for the physician's assistant, but two patterns seem to be emerging: staff role and line role. "Self-acceptance and satisfaction appeared to occur most frequently when the physician's assistant felt that he was carrying out unique functions distinct from those of other paramedical personnel... role set accaptance appeared to be high when the role set members saw the physician's assistants as carrying out a set of functions visibly helping them in their own work..."

"Can Doctors' Aides Solve the Manpower Crisis?" Medical World News. 11:25-30, January 23, 1970.

Describes the development and organization of the Medex program at the University of Washington. Lists programs training physician's assistants or similar personnel. Discusses some of the problems, such as titles, education, and legal implications involved in the creation of physician's assistants.

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Carlson, Clifford L. and Athelstan, Gary T. "The Physician's Assistant: Versions and Diversions of a Promising Concept," Journal of the American Medical Association. 214:1855-1861, December 7, 1970.

"This communication examines the factors that are influencing the process of putting the physician's assistant concept into practice. These factors include the diverse definitions of the functions of such as assistant, his uncertain legal status, the divergent conceptions of his role on the part of various specialty groups, and the establishment of educational requirements."

Cihlar, Carroll. "The Physician's Assistant: Stephen L. Joyner, P.A.," Hospitals. 45:53-57, June 1, 1971.

Description of the activities, performance, and acceptance of a graduate of Duke University's physician's assistant program, employed by a family practitioner in a small North Carolina community.

Coye, Robert D. and Hansen, Marc F. "The 'Doctor's Assistant': A Survey of Physician's Expectations," Journal of the American Medical Association. 209:529-533, July 28, 1969.

Report of a study "....designed to assess the attitudes of practicing physicians with regard to the responsibilities which they would, or would not, delegate to assistants." Of the 32% of the physicians who responded, 61% believed that assistants are needed and 42% said they would use an assistant in their practice.

Eichenberger, Ralph W., Hamburg, Joseph, Ewer, Robert W., and Kotheiner, Thomas G., Jr. "The Clinical Associate: Rationale for Training A New Health Professional," Journal of the Kentucky Medical Association. 67:677-680+, September, 1969.

The Clinical Associate trained at the University of Kentucky acts as an associate and an extension of the physician. "The basic concept of the Clinical Associate is that he be associated with a duly qualified and licensed physician; that he be a true 'associate' of the physician; and that he function only as an agent of the physician in a clearly delineated set of activities." A training program for the Clinical Associate is proposed.

Estes, R. Harvey, Jr. "Advantages and Limitations of Medical Assistants," Journal of the American Geriatrics Society. 16:1083-1087, October, 1968.

The Duke University Physician's Assistant program is outlined. The selection of candidates, the training program, duties of the physician's assistant following completion of the program, and evaluation of the trainee are described. Problems and dangers, such as preformed attitudes, the future of the physician's assistant, and legal constraints, among others, are enumerated.

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Estes, E. Harvey, Jr. "The Critical Shortage--Physicians and Supporting Personnel," Annals of Internal Medicine. 69:957-962, November, 1968.

"There is a growing deficit of physician services, primarily related to increased demands and changing patterns of practice rather than to decreased numbers, and there is a serious maldistribution of physician manpower...

"Increased individual physician productivity must be a major part of any solution. The use of assistants is an achievable and practical goal, as evidenced by early experience with the Duke Physician's Assistant Program."

Estes, E. Harvey, Jr. and Howard, D. Robert. "Potential for Newer Classes of Personnel: Experiences of the Duke Physician's Assistant Program," Journal of Medical Education. 45:149-155, March, 1970.

Description of the Duke University Physician's Assistant program: the students, the curriculum and the skills taught. Of the 29 physician's assistants graduated, 14 have stayed at Duke and 15 are employed in practice settings. Acceptance by physicians and patients has been good.

Estes, E. Harvey, Jr. "Task Oriented Versus Degree Oriented Training Concept of Optimizing the Use of the Most Highly Skilled With Specific Personnel." Military Medicine. 134:386-389, June, 1969.

The physician's assistant works with the broadbased primary physician, increasing output 30-50%. Training through repeated performance under close supervision prepares a highly skilled assistant. Difficulties include questions about liability and license.

Estes, E. Harvey, Jr. and Howard, D. Robert. "The Physician's Assistant in the University Center," Annals of New York Academy of Sciences. 166:903-910, December 31, 1969.

There is a need to train and utilize a variety of new manpower categories to bridge the gap between health care services needed and desired and those the health industry can provide. The use of assistants, whether they be dependent or independent, is necessary. The Duke University Physician's Assistant program is an example of the training and use of dependent assistants.

Ewer, Robert W., Hamburg, Joseph H., Eichenberger, Ralph W., and Kotheiner, Thomas G., Jr. "The Clinical Associate:An Indiana Concept," Journal of the Indiana State Medical Association. 63:234-237, March, 1970.

Description of the activities and training of a Clinical Associate at the University of Kentucky. The Clinical Associate spent one year of didactic and clinical practice training at the University of Kentucky and one year of clinical preceptorship. The Associate takes a history and performs a physical examination, assists in home and nursing care of invalids and chronically ill patients, makes follow-up observations of patients, and performs simple procedures.

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Kadish, Joseph and Long, James W. "The Training of Physician Assistants: Status and Issues," Journal of the American Medical Association, 212:1047-1051, May 11, 1970.

Discusses some of the programs, both operational and planned, to prepare physician's assistants. Reviews some of the issues involved in the introduction of a new type of health worker into the health system, such as: determining duties, functions, and responsibilities which can be transferred from physician to physician's assistant; determining the need for a new occupation vs. extension of existing occupations; organization of physician assistant programs; setting in which physician assistant should be trained; opportunities for career development; sources of candidates for physician assistant programs; relationship to cost of medical care; professional and consumer acceptability; and legal implications.

Kurland, Shabse H. "An Associate of Arts Program for Training Mental Health Associates," American Journal of Public Health, 60:1081-1090, June, 1970.

The Catonsville Community College has developed a two year program leading to an associate degree to prepare mental health associates. The program prepares individuals to function as mental health technicians using skills developed through a generalist approach. The curriculum and students are described.

Lave, Judith R., Lave, Lester B., and Morton, Thomas E. "The Physician's Assistant: Exploration of the Concept," Hospitals, 45:42-51, June 1, 1971.

Discusses the increase in physician efficiency through the development and use of the "paramedic," a health professional trained to provide primary health care. Some problems and issues related to the use of paramedics are explored, such as cost of training and reimbursement policies, potential functions, quality of care, and productivity of paramedics, education and career mobility, and the development of a core curriculum for health personnel. The use of paramedics has potential for improving the delivery and quality of health care and should be expanded and encouraged.

Lewis, Charles E. "The Physician's Assistant: Acceptance of Physician's Assistants," Hospitals. 45:62-64, June 1, 1971.

Reviews available information on the acceptability of physician's assistants to physicians, patients, and other health professionals. "While there is little doubt that physician's assistants are acceptable to physicians and to patients, there is less evidence that they have been accepted by other health professionals." Cites need for further research on the consequences of role alterations of health professionals.

Myers, Hu C. "A New Educational Program for Physician's Assistants," Medical Times, 97: 140-144, March, 1969.

Description of the development, purposes, and objectives of the physician's assistant program at Alderson-Broaddus College. The duties of the physician's assistant are outlined.

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Myers, Hu C. "The Physician's Assistant," West Virginia Medical Journal. 65:303-304, September, 1969.

Brief description of the physician's assistant program at Alderson-Broaddus College, a four year program which leads to a BA degree. The aim of the program is to provide the physician with an assistant who has breadth of education in the liberal arts to make him capable of adjusting to the problems of present day life and depth of education in the medical sciences to give him understanding which would help him apply his knowledge.

Myers, Hu C. "The Physician's Assistant in the Community Hospital and in Office Practice," Annals of New York Academy of Sciences, 166: 911-915, December, 1969.

Describes the development and the curriculum of the physician's assistant program at Alderson-Broaddus College. A sample curriculum and a detailed list of duties and tasks of the physician's Assistant are provided.

Robinson, George W. "Nonphysician Surgical Assistants," Hospitals. 45:76+, June 1, 1971.

Describes the use and on-the-job training of nonphysician personnel as first assistants in surgery. Emphasis is placed on proper selection of a physician or a surgical assistant to assist based on the complexity of the surgical procedure, the patient's condition, and the competency of the surgical assistant.

Silver, Henry K. and Hecker, James A. "The Child Health Associate," Hospitals. 44:47-49, October 16, 1970.

Describes the organization and content of the child health associate program at the University of Colorado. A proposed course of study is detailed.

Smith, Richard A. "MEDEX: A Demonstration Program in Primary Medical Care," Northwest Medicine. 68:1023-1030, November, 1969.

MEDEX is a program designed to extend overworked physician's ability to provide medical care to their patients. The conditions leading to the development of the MEDEX program, as well as the design and implementation of the program are discussed.

Stead, Eugene A. "Conserving Costly Talents - Providing Physicians' New Assistants," Journal of the American Medical Association. 198:1108-1109, December 5, 1966.

Description of the intent, admission requirements, curriculum, and organization of the Duke University program to prepare physician's assistants.

Stead, Eugene A. "Current Concepts - Training and Use of Paramedical Personnel," New England Journal of Medicine. 277:800-801, October 12, 1967.

A description of the Duke University physician's assistant program.

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## Legislative and Legal Implications

Anderson, Betty Jane. "Orderly Transfer of Procedural Responsibilities from Medical to Nursing Practice," Nursing Clinics of North America. 5:311-319, June, 1970.

Discusses existing nursing and medical practice definitions and negligence and malpractice in relation to the expanded role of the nurse, concluding that "There is some authority to indicate that the courts would be reluctant to find that a nurse who is not exceeding the scope of her competency and who is cooperating in the provision of improved patient care services has engaged in the unauthorized practice of medicine."

Ballenger, Martha D. "The Physician's Assistant: Legal Considerations," Hospitals. 45:58-61, June 1, 1971.

Discusses the legal risks involved in the use of an unlicensed, physician-dependent member of the health team. Describes the model legislation for physician's assistants developed by Duke University and the California physician's assistant law. Discusses safeguards needed for hospitals to allow physician's assistants to function in the hospital.

Bergen, Richard P. "Irregular Assistants and Legal Risks," Journal of the American Medical Association. 207:1231-1232, February 10, 1969.

Discusses fact that the physician is always liable for injury caused to his patients due to negligence by any of his employees. The use of paramedical personnel necessarily increases the risks, but the risks are diminished if the assistant is carefully trained and supervised. Discusses effect of licensure or certification of paramedical personnel on physician's liability.

Bergen, Richard P. "Use of Irregular Paramedical Personnel," Journal of the American Medical Association. 207:1027-1028, February 3, 1969.

"If a physician knows that an assistant is qualified to perform the particular procedure and if it is performed under his direction and supervision which is sufficiently close and detailed to prevent harm to the patient in the event of untoward developments, he may properly delegate complicated and delicate procedures to the assistant."

Curran, William J. "New Paramedical Personnel - To License or not to License?" New England Journal of Medicine. 282:1085-1086, May 7, 1970.

Discusses the Colorado child health associate law in relation to the licensure of new paramedical personnel. Concludes that "In general, it is best in the evolution of professional groups to start with registration acts and to move to licensure only after the professional group is fully matured, clearly defined in its responsibilities and capable within its own educational and training programs of meeting the reasonable manpower needs in its field of practice."

Silver, Henry K. "New Allied Health Professionals: Implications of the Colorado Child Health Associate Law," New England Journal of Medicine, 284:304-307, February 11, 1971.

Defense of the Colorado Child Health Associate Law as being necessary to prevent new types of professionals from extending their activities beyond their capabilities and reasonable limits.

Nurse-Physician Relationships

Bates, Barbara. "Doctor and Nurse: Changing Roles and Relations," New England Journal of Medicine, 283:129-134, July 16, 1970.

"Among many patient needs, the physician concentrates on diagnosis and treatment and must work with others to provide comprehensive care. Although caring, helping, comfort and guidance are fundamental to nursing, forces within medicine, nursing and society tend to constrict the nurse's role to tasks delegated by medicine. An interprofessional relation characterized by medical authoritarianism and nursing's dependence blocks realization of the full potentials of the doctor-nurse team. Consequently patient care suffers accordingly.

"New approaches, including the clinical nurse specialist, the expanded role of the nurse and the physician's assistant, show promise of improving care. Each approach has its advantages; all will require reasoned judgment and joint planning."

Connelly, John P. and Stoeckle, John D., Lepper, Edna S. and Farrisey, Ruth M. "The Physician and the Nurse - Their Interprofessional Work in Office and Hospital Ambulatory Settings," New England Journal of Medicine. 275:765-769, October 6, 1966.

Discusses the need to make the most of physicians' skills by transferring some of his less demanding functions to other professionally trained people. Cites examples of clinics in which nurses assume more responsibility for the care of patients. Examines the effectiveness and acceptability of these clinics and some of the problems involved in having nurses assume these responsibilities.

Pearlmutter, Deanna R. and Warner, Gloria Marmar. "Attitudes of Physicians to Nurses," New York State Journal of Medicine. 70:2840-2846, November 15, 1970.

Report of a study to ascertain the attitudes of physicians toward mental health nurse consultants conducting a special project. Results indicated that the physicians had many ambivalent or negative attitudes toward the consultants as nurses.

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**Books**

Brown, Esther Lucile. Nursing Reconsidered: A Study of Change, Part II. Philadelphia: J. B. Lippincott Company, 1971.

Describes recent developments in nursing in ambulatory care and community health settings. Chapter 11 is particularly applicable as it describes the pediatric nurse practitioner programs at the University of Colorado and the Massachusetts General Hospital. The chapters describe nurses functioning in expanded roles in a variety of places.

Duff, Raymond S. and Hollingshead, August B. Sickness and Society. New York: Harper and Row, Publishers, 1968.

A study of the "inter-relations between the care hospitalized medical and surgical patients receive and the social environment in which it is administered." The conclusions suggest that: 1) health professionals be trained to deal systematically with the personal and social factors which affect the diagnoses and treatment of patients; 2) continuing senior medical leadership focus on the care of patients in each patient-care division; 3) nurses be responsible largely to this medical leadership; and 4) medical auxiliaries eventually replace nurses and be given more responsibility and career opportunities in patient care.

Other

Mizgerd, Dorothy E. and Newton, Pamela J. The Physician's Assistant: An Approach to Improved Patient Care. Washington, D.C.: Metropolitan Washington Regional Medical Program, June, 1970.

"An overview of Physician's Assistant programs in the United States and a study of their applicability to the Metropolitan Washington Area." Includes a summary of programs preparing both nurse practitioners and physician's assistants.

Mossey, Jana and Nicholson, Sally. Non Physician Personnel in Ambulatory Child Health Care: A Review. Chapel Hill: University of North Carolina, Health Services Research Center, March, 1970.

Provides information gathered by reviewing the literature and visiting various places utilizing non-physician personnel to provide health care to children. Includes a list of training programs preparing nurses for practitioner roles and physician's (pediatric) assistants. Contains an annotated bibliography on the use and preparation of non-physician personnel in child health care.

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The Third Annual Duke Conference on Physician's Assistants. Durham, North Carolina: Duke University, November, 1970.

Collection of papers and discussions on the physician's assistant presented at the third annual conference on physician's assistants at Duke University.

Other

Bibliography Available

The Physician's Assistant: An Annotated Bibliography.
Available from the Educational and Occupational Research Division
Institute for Interdisciplinary Studies
American Rehabilitation Foundation
123 East Grant Street
Minneapolis, Minnesota 55403

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